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Original Communications.

*NEW THERAPEUTIC AGENCIES.**

LECTURE VI.—ON RENAL INSUFFICIENCY AND ITS TREATMENT.†

BY PROFESSOR DUJARDIN-BEAUMETZ,‡ PARIS, FRANCE.

GENTLEMEN:—No study is more interesting than that of the urine from the point of view of the diagnosis of diseases and the therapeutic consequences that have been deduced therefrom. That would be an interesting chapter in the annals of medicine which would give this history of urology from the beginning.

It was in the Middle Ages that urology attracted the most attention from the medical profession and the laity. The "Chemiatry" which then directed medical studies favored this tendency, and there was a class of physicians called *urinary doctors* who pretended to base on the examination of the urine alone the diagnosis of the disease and the indications for treatment. Zimmermann, in his "Treatise on Experience," tells us that the people of that age demanded of the physician that without regard to other signs he

* A second series of "New Medications," published in 1887.

† From advance sheets, revised by the author (translated by E. P. Hurd, M.D.). Lectures delivered in Cochin Hospital, Paris, France.

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should read in the urine all the history of a disease and the constitution of the patient. The Dutch school of painting has commemorated this feature of the times, and Gerard Dow has transmitted to posterity this tendency in his masterpiece, the "dropsical woman," which graces the Museum of the Louvre.

The alchemists emulously sought in the urine for the principal elements of the philosopher's stone, and the discovery of phosphorus in urinary sediment by Brandt, of Hamburg, in 1669, gave a new impetus to these researches. Then, to this exaggerated enthusiasm of the times succeeded a contemptuous neglect, and physicians of the following generations completely abandoned this department of medical inquiry.

But with the progress of biological chemistry, this question of the alterations of the urine has become more important than ever before, and we now find that it is very difficult to do full justice to a patient and institute a proper treatment without a preliminary analysis of the urine.

The ancients had for their guide in the examination of the urine only the physical signs furnished by that fluid; they examined with care the color, the deposits, and the modifications which the renal secretion presented. This examination, which was of course very superficial, necessarily furnished quite uncertain indications, and, in order that you may judge of this for yourselves, I must refer you to a curious book published by Davach de la Rivière in 1696, under the title of "Mirror of the Urine," a treatise which may be considered as a type of works of this kind.

I must remark here that the first printed works on medical subjects were such as pertained to the examination of the urine. Thus it is that, in 1483, Egidius published his verses on the urine; Bernard de Gordon, in 1484, another work concerning urine; and you will find, in 1489, 1515, 1524, 1541, and 1543, writings on the *urinarium judicis* of Montagnana, Janbert, Vala, etc. But to return to Davach de la Rivière, and to show you how inconsequent and nonsensical was the language of physicians on this subject, I will cite a passage on the urine of women.

"The urine of women who are not pregnant is of a yellowish color approaching to whiteness, with a certain turbidity and thickness which is very marked. It borders on whiteness because of the cold and phlegmatic temperament of the sex. The urine is heavy and turbid because phlegmatic impurities abound in these patients, and easily find a vent by the kidneys."

I will not cite any more of this nonsense, for you realize already how obscure were all the data furnished by ancient urology, and I hasten to more modern times.

To day it is with the greatest care that chemists perform urinary analysis, and it is in our power to obtain a complete estimate of the different elements which constitute the urine. It has even been demonstrated conclusively that the quantity of the urine plays only a secondary *rôle* in the phenomena of renal insufficiency, for what it is important to know in the urine is not so much the water as the solid materials which it contains. It is in these solid matters that we find all the *débris* of the organic combustions and the products of disassimilation, *débris* and products which, if retained in the economy, occasion poisoning.

I shall not enter into the detail of all the organic substances contained in the urine. You have only to refer to the list published by Gautrelet, to see that their number is not less than thirty-five.*

I add that there have also been found in the urine organic alkaloids and microbes. There is, then, a capital interest in knowing the amount of solid matters contained in the urine. To ascertain this, there are several methods: Some are very thorough, and belong to the domain of pure chemistry, and you will find a description of them in all your treatises on Urinology, and, in particular, in the excellent manual of Yvon;† the others are empirical, but are sufficiently exact for practical purposes.

The most simple method consists in multiplying the last two figures of the density by the coefficient 2.33, and you have thus almost the precise figure of the solid materials contained in a litre of urine. In order to have that of the solid materials voided in twenty-four hours, you will make use of the following equation:

$$P = \frac{D \times a \times V}{1000}$$

P represents the weight of the solid material; D, the last two figures of the specific gravity of the urine; V, the volume, and *a* the constant coefficient 2.33.

* Gautrelet, "Urine, Deposits, Sediments, Calculi," Paris, 1889.

† Yvon, "Clinical Manual of Urinary Analyses," Paris, 1889.

Thus, for example, the urine of your patient has a density of 1.016, and the patient has voided one thousand five hundred grammes of urine; you will thus be able at once to obtain the figure of 55.92 grammes, representing the amount of solid materials contained in this urine.

As for the chemical examination of these solid materials, without entering into those precise analyses which belong to the laboratory, you can have an approximate idea by estimating the urea. You know that we are in possession of very rapid processes, which enable us to make this volumetric analysis at once by employing hypobromite of sodium. The most handy apparatus to use in clinical practice is that of Thierry.

With these three elements—the total quantity of nitrogen in the urine, the amount of solid material, the density—you have generally sufficient data to know if the urine which you have before you is sufficient or insufficient.

As for the albumen, which formerly had a part of so much consequence in urology, it must be confessed that its *rôle* has to-day lost much in importance: for the proportion of albumen may vary considerably without the state of the patient being materially better or worse thereby, and we may even say that those cases are the most grave where the albumen is in scarcely appreciable quantities, while, on the other hand, a person may be in a fair state of health with considerable albumen in his urine, 5 parts per 1000, and even more.

The conception of Bright's disease has, in fact, much varied. During the first few years after Bright had communicated the results of his researches, it was thought that all the manifestations of this disease were only states more or less advanced of one and the same renal lesion. This was the doctrine of unicity. It was defended by Rilliet and Frerichs. Then anatomo-pathological studies underwent greater perfection, and pathologists attributed to each special alteration of the kidney a distinct morbid entity.

Lastly, in a third period quite recent, characterized by the labors of Cornil and Brault, pathologists have come back to the unicity of the lesions; some of these are of inflammatory origin and constitute the nephrites properly so called; the others are the systematized nephrites, and correspond to the arteriosclerous alterations of the kidney. Moreover, dominating all the contention, we must place the two great theories of albuminuria, humoral and renal. In the one, the lesions of the blood are primary; this is the theory of Semmola; in the other, on the contrary, it is the alterations of the renal parenchyma which precede the symptoms of albuminuria.

However this may be, do not attach a great importance to the quantity of albumen in the urine, but rather devote your whole attention to the proportion of solid materials and the presence of the toxines contained in the urine.

When the solid materials are in too little quantity, medical help is required, and there are several ways in which you can extend this help. Already, in a previous article, I have set forth the principal points of this important question * in therapeutics, and I return to the subject to-day to complete the indications which I have there given.

In cases of renal insufficiency there are two great indications to fulfil,—on the one hand, to favor as much as possible the elimination of the toxines accumulated in the economy; and, on the other, to reduce to a minimum the figure of the toxines introduced by the food or resulting from the processes of assimilation or disassimilation.

To meet the first indication, we make use of purgatives, sudorifics, and diuretics,—that is to say, we apply to all the emunctories for the elimination of the solid materials of the urine. As for diuretics, medical authorities have long disputed as to whether in cases of chronic nephritis it were wise to employ this group of medicines.

It was feared that the exaggerated work imposed on the kidneys might augment the congestion, and for this very reason aggravate the disease. These fears were rather theoretical than practical, and to-day everybody seems agreed as to the advisability of the employment of diuretics.

It is to a special group of medicaments to which we give the name of *tensor diuretics*—that is to say, substances promoting diuresis by augmenting the arterial tension—that we should make application. At the head of these diuretics we should place digitalis and digitaline.

Of late years, this discussion of digitalis and the digitalines has been opened up anew. While Huchard and Potain have maintained that, from a diuretic point of view, digitaline gives the same effects as digitalis, others (and I am of the number) affirm the superiority of digitalis over digitaline.

My laboratory chief, Bardet, in his excel-

* *Bull. de Thèr.*, t. cxvi. p. 2.

lent memoir on the digitalines, has shown us that under this name there are in commerce two products absolutely different, the one soluble in water, which is the German *digitaline*, or *digitaleine*, the other insoluble in water but soluble in chloroform, namely, the French *digitaline*. Arnaud has put in clear light this fact, that the crystallized French digitaline may serve as a type for the study of digitaline.

The difference between these two products is very great, and as it is still difficult for us to know which digitaline the druggist possesses to whom our prescriptions may be carried, I think that, till this question be fully settled, it will be wise to stick to the preparations of digitalis, and, in particular, the tincture, the infusion, and the maceration, the latter always seeming to bear off the palm. If, however, you wish to employ digitaline, it is Potain's solution which you should order; this is a solution made with water, alcohol, and glycerin, and containing one milligramme of the crystalline digitaline of the Codex per cubic centimetre; and this cubic centimetre should give, as estimated by the officinal dropping-tube, fifty drops.

In your prescriptions, when you employ digitaline, always have care to add "the digitaline of the Codex," and to specify whether it be amorphous or crystallized; it is the latter to which you should give the preference. It is necessary to be very prudent in the employ of this crystallized digitaline, and to give only a quarter to a half milligramme, repeating the doses slowly and cautiously, so as to attain the amount of one milligramme ($\frac{1}{64}$ grain) in the twenty-four hours.

By the side of digitalis and the digitalines, and almost on a par with them, I would place strophanthus, which has the advantage of producing an immediate action, while it takes two or three days for the effects of digitalis and digitaline to be manifested. I do not intend to go much into this subject of strophanthus to-day, for I propose soon to devote an entire lecture to the study of the tonics of the heart. Some have pretended that strophanthus causes nephritis. I have never seen anything in its action to bear out this view; and I have always derived certain benefits from strophanthus in cases of urinary insufficiency, whenever the alterations of the kidneys were not too great; for it is important that you should remember that, in order that diuretics may act, there should be portions of the kidney that are healthy; and, however powerful a tensor diuretic may be supposed to be, it is incapable of producing its effects if the heart be completely sclerous, or the kidney completely altered.

Sparteine deserves only a secondary place, and the same may be said of adonis and convallaria. But there is a medicament which merits a preponderant place, namely, caffeine. This substance presents the great advantage of being suitable for administration in hypodermic injections.

You may use the following formula:

℞ Pure caffeine,
Benzoate of sodium, āā 2 grammes (ʒss);
Boiled water, 6 grammes (ʒiss.) M.

Inject a whole syringeful of this solution in a fleshy part of the body, and repeat it two or three times a day. By the side of caffeine should be placed theobromine; you know the many points of contact which exist between the active principle of coffee and that of cocoa. If we may trust the researches of Stricker, caffeine is nothing but methyltheobromine. Fischer, on the other hand, maintains that theobromine is nothing but bimethylxanthine. According to experiments made by Gram, theobromine has an intense diuretic action; he employs the salicylate of theobromine in the dose of 6 grammes (90 grains) a day.* Germain Sée, who has claimed the priority in researches on the diuretic action of theobromine, denies the possibility of the solubility of theobromine in salicylic acid.† I am resuming my studies on the diuretic action of the xanthine series; these researches are to serve as the bases of the thesis of one of my pupils, Mlle. Pomerantz; I shall then be better able to give my opinion on the diuretic action of the active principle of cocoa. But I am prepared to-day to speak to you of the diuretic effects of a substance introduced into therapeutics by Heckel and Schlagdenhaufen, namely, the kola nut. One of my pupils, Dr. Monnet, has devoted his graduating thesis to the properties of this nut, and we have shown its happy influence in the treatment of cardiac affections and chronic diarrhœas.‡ My first researches led me to doubt the diuretic qualities of kola; to-day I believe that the nut of *Sterculia acuminata* possesses undoubted diuretic vir-

* Gram, "Clinical Researches on the Diuretic Action of Theobromine" (*Therapeutische Monatshefte*, 1890, No. 1, and *Bull. de Thèr.*, t. cxviii. p. 283, 1890.

† G. Sée, "On the Diuretic Action of Theobromine" (*Médecine Moderne*).

‡ Monnet, "Kola, a Physiological and Therapeutical Study" (THERAPEUTIC GAZETTE, 1885, p. 223), *Thèse de Paris*, 1884.

tues, which it owes to the caffeine and theobromine which it contains. We may utilize the infusion of torrefied kola, which is prepared like coffee, or the tincture and fluid extract; the former is given in dessertspoonful, the latter in teaspoonful, doses.

To these medicaments, the diuretics, we must add an entire group of substances which belong to dietetics,—the lactoses and the glucoses.

Since Professor G. Sée repeated, though in a different form, the experiments made, in 1881, by Richet and Moutard-Martin, which showed the evident action of lactose and glucose as diuretics, this question of the sugars has been the subject of new researches which I have made in my service, and which you will find recorded in the thesis of one of my pupils, Sophie Meilach.*

The experimental researches of Moutard-Martin and of Charles Richet on polyuria are of exceeding interest, and it is a pity that they passed almost unnoticed at the time of their publication.†

These writers experimented on curarized or chloroformed animals whose ureters were exposed to view and cut. They reckoned the quantity of urine excreted in a given time, then introduced directly into the blood the substance to be experimented with.

In this connection these experiments constitute a very serious argument for those who with me maintain that the method of intravenous injections is a bad method for judging of the therapeutic value of a medicinal substance. In fact, the first attempt of these experimenters was to estimate the *rôle* of waters as a diuretic. From a clinical point of view, it is indisputable that water is one of our best diuretics; now, from the standpoint of intravenous injections, water is not only not a diuretic, but it is anuric, and completely suppresses the secretion of urine.

The sugars, whether we employ glucose or lactose, are, on the contrary, according to the experiments of Martin and Richet, the most powerful diuretics, and this in such a proportion that if we represent by 1 the quantity of normal urine eliminated in a given time, that produced by sugar introduced into the veins would be represented by the figure 40 for the same space of time. The urine thus obtained always contains sugar.

Experiments on patients with glucose were made by Duplaix, at Tenon Hospital, in 1879, and they gave favorable results. All these facts seem to have been forgotten when Professor G. Sée made, on June 11, 1889, a communication on lactose as a diuretic.‡ In support of his position, he cited twenty-five cases of renal insufficiency from multiple causes, where sugar of milk, administered in the dose of 100 grammes dissolved in two litres of water per diem, had produced remarkable effects. It has been my belief that all the sugars must have the same property, and instead of lactose I have employed glucose, and have obtained the same effects, which were perhaps even more marked than with lactose. This is easily explained, as, from experiments made by Dastre, on the one hand, and by Bourquelot and Trosier on the other, it results that lactose, when administered by mouth, is transformed into glucose and eliminated in this form.

I at first thought that it was the presence of glucose in the urine which explained the diuretic action of these substances, and that this temporary glycosuria was the cause of the polyuria. This is not the case, for in the healthy man, not predisposed to diabetes, and in animals, as the hare, one has to give enormous doses of glucose to produce glycosuria. I have never observed this glycosuria in my patients. In a hare weighing 3480 grammes it was necessary to administer 100 grammes of glucose in order to find this substance in the urine, which shows that one would have to give to a man weighing 55 kilogrammes, 1650 grammes of glucose-syrup in order to see the latter pass out in the urine. Nothing like this quantity has ever, of course, been administered, and we keep rigorously to doses not exeeeding 100 grammes of glucose-syrup a day dissolved in a quart and a half or two quarts of water.

As there exist several sorts of commercial glucose, you should prescribe the solid purified glucose. Make a syrup containing 750 grammes of solid glucose and 250 grammes of water, for one litre of syrup. The quantity of water is just sufficient to make a good syrup.

This syrup may be flavored with tincture of orange peel. The dose would be five tablespoonfuls during the twenty-four hours.

If you make use of G. Sée's formula, you may prescribe as follows: Lactose 500 grammes; divide into ten powders. Dissolve

* Sophie Meilach, "The Sugars as Diuretics" (*Thèse de Paris*, 1889).

† Moutard-Martin and Charles Richet, "Experimental Researches on Polyuria" (*Arch. de Phys.*, t. viii., 1881, p. 1).

‡ See the entire article in *Medical Age*, August 10, 1889, and entitled, "A New Diuretic for Heart-Disease." See also THERAPEUTIC GAZETTE, 1889, p. 537.

one powder in a quart of water. Two powders to be thus taken during the twenty-four hours.

You can make use of either of these sugars in cases of urinary insufficiency, and even in the event that there should be vomiting or a great repugnance for sugar, do not forget that you may employ the rectal method, the solutions of glucose or of lactose being perfectly absorbed by the large intestine. So much for the group of diuretics.

Quite as important a group is that of purgatives, for the intestinal mucous membrane can supply the place of the renal as an emunctory. Every patient effected with urinary insufficiency should have at least two or three free liquid stools during the day.

To obtain this result, any laxative may be used. You may employ either pills or powders or purgative waters, or even drastics when symptoms of uræmia appear, and you should adapt your laxative to the condition of intestinal tolerance of your patients.

Finally, the skin completes these methods of elimination. It has been maintained that the cutaneous surface is an external kidney; this is true within a certain limit, for urea and uric acid may be discovered in the sweat.

It is therefore necessary to promote actively the functions of the skin in your patients, and this may be done by daily lotions made with a sponge wrung out of tepid water to which has been added a little cologne-water or some other alcoholic aromatic; after having dried the patient, an energetic dry friction should be given with a leather glove.

But it often happens that despite all efforts, and the use of the most energetic of the diuretics, purgatives, or sudorifics, you are utterly unable to cause the elimination of a sufficient quantity of the toxines accumulated in the blood, and the phenomena of poisoning become more and more pronounced. It will not do yet to despair, for we can act upon the whole mass of the blood in order to cause disappearance of the toxines which have accumulated there. The first method to employ is inhalations of oxygen, which augment the vitality of the red globules, excite the combustions, and permit the destruction or transformation of certain of these toxic substances.

The other process, still more topical, consists in blood lettings, either local or general; the latter are preferable, because they give issue to a certain quantity or the poisons accumulated in the blood.

These blood-lettings must be measured by the resistance of your patient. In certain cases even, when the patient is too feeble, you may have to resort to transfusions, and were it not for the difficulty connected with the operation of transfusion, it is a very rational and physiological procedure, and the numerous examples which Dieulafoy has furnished are a proof of its efficacy. There remains to be considered the question of hygiene, and with this I shall finish the lecture.

I have endeavored to show you that all the grave accidents which supervene by reason of urinary insufficiency depend on the accumulation of toxines in the economy. Whence come these toxines? They have three origins: some are the result of the regular and physiological working of the organism. Armand Gautier has, in fact, shown us by his experimental researches that the animal cell, like the vegetable cell, produces alkaloids. A second source is the faulty functional activity of the digestive tube, which, by vicious fermentations, leads to the production of alkaloidal substances belonging to the group of ptomaïnes. Another origin is the food; in fact, he who lives largely on meat introduces into his economy a certain number of cadaveric alkaloids along with his food. To each of these origins corresponds a special therapeutic indication.

The first of these indications is difficult to meet. It is impossible for us to prevent the regular integrations and disintegrations connected with the exercise of the organic functions; nevertheless, on this particular point we have some indications furnished by physiology. Whenever we exaggerate the functions of the cells we augment thereby the production of these toxines. We should then require patients affected with urinary insufficiency to avoid all fatigue and all occasions of physical overwork, as well as mental. It seems, in fact, proved that exaggeration of the intellectual functions constitutes a veritable physiological labor.

The second indication consists in regulating the digestive functions and in combating as far as possible the vicious fermentations which may take place there. This is the *rôle* of intestinal antisepsis, and here we find ourselves, as in the case of those with dilated stomachs, under the conditions of a special treatment. You will then make these patients take the capsules of salicylate of bismuth, of which I have before given you the formula:

℞ Salicylate of bismuth,
Magnesia,
Bicarbonate of sodium, āā ʒiiss. M.
Sig.—Divide into 30 medicinal capsules.

In cases that demand a more energetic action you will employ the following formula:

℞ Salicylate of bismuth,
Magnesia,
Naphthol *a*,
Bicarbonate of sodium, aa ʒiiss. M.
Sig.—Divide into 40 medicinal capsules.

If the naphthol is badly supported by the stomach, you can substitute salol in the same dose.

The last indication is met by the vegetarian regimen. Already, in my "Alimentary Hygiene," I have in connection with the dietetic treatment of albuminuria alluded to the treatment of Senator. At the time when Senator published his views of the dietetics of renal diseases, the labors of Bouchard and of Gautier had not been made known in their entirety. To-day we know on what basis such a treatment may be established.

It suffices to subject the individual to a vegetarian regimen, or, to speak more precisely, to a diet which shall reduce to a minimum the toxines contained in the aliments. I have given you in a previous lecture on the vegetarian regimen all the reasons which led me to consider this regimen as fulfilling admirably all the conditions required. I shall not, then, repeat these reasons; it will be sufficient if I sum up briefly the dietetic rules which I then gave.

The patient should live exclusively on milk, eggs, starches, green vegetables, and fruits.

a. The milk should be taken under all its forms,—raw or boiled; cheese which is nearly fresh; creams.

b. The eggs shall be hard done; scrambled eggs; eggs smothered in cheese (*soufflés au fromage*).

c. The starches should be in mash or stew; stewed potatoes, beans, lentils, *revalescière*, *racahout*, lactated farina; gruels and puddings of wheat, rice, Indian corn; barley, oatmeal, macaroni, strained panada, etc.

d. The vegetables should be thoroughly cooked,—stewed carrots, turnips, Julienne; cooked salads, stringed beans, green peas, spinach, etc.

e. Stewed fruits.

If you order meat, see that it is well cooked, overdone rather than underdone. Cooking destroys the elements of putrefaction and fermentation.

You will absolutely forbid game, mollusks, crustaceans, fish, all old cheeses, because these substances contain ptomaïnes. I insist especially on those developed by putrefying fish; these ptomaïnes are the most rapidly produced and the most toxic. As for mollusks, poisonings produced by clams, oysters, and mussels have for these causes the same toxines.

The patient may eat bread, toasted or plain.

For beverages he should drink milk, beer, or extract of malt. Never any spirituous liquors; never pure wine.

This regimen applies only to cases of little intensity. When the symptoms of uræmic poisoning are menacing, there is but one alimentary substance applicable,—namely, milk.

Such are the considerations which I desire to present on the treatment of urinary insufficiency. I have shown you that there is much which therapeutics can accomplish. In the next lecture I shall take up the opposite side of the question, and tell you what you are to do when there is exaggeration of the urinary secretion; in other words, I shall speak of the anuric medication.

TREATMENT OF THE SEPTIC ACCIDENTS OF THE PUERPERAL STATE.

By E. P. Hurd, M.D., Newburyport, Mass.

FORTUNATELY, puerperal fever is relatively infrequent. But a small proportion of the cases that come under the observation of the obstetrician present any serious deviation from the normal. And yet even country physicians practising in localities whose sanitary conditions seem to be irreproachable have not been altogether exempt from puerperal accidents. Though death from septic causes in private practice is rare, yet it does sometimes occur, and the milder forms of septicæmia, manifesting themselves in headache, fever, and uterine tenderness, lasting several days; in tedious convalescence after confinement, with circumscribed peritonitis, phlebitis, with mammary abscess or other complication, must have now and then come within the experience of even the self-confessed "old fogy," who does not believe in the modern "doctrines of germs," never practises antisepsis, and yet has always been "lucky."

In city practice septic complications must be pretty common, if men of large obstetric practice, like Dr. Abram Jacobi, own to seeing

"forty to fifty bad cases every year, few of which recover."*

I am inclined to think that there is some unintentional exaggeration in Dr. Jacobi's statement, for to see forty or fifty cases of puerperal septicæmia a year is a very large number for any practitioner, and I do not believe that Dr. Jacobi is any less careful about asepsis and antisepsis than any of his colleagues. The cases to which he alludes, I take it, were women that had been attended by midwives or physicians who use no antiseptic precautions; when seen by Dr. Jacobi these patients were in an advanced condition of puerperal sepsis. It is true that the midwives of this country have not yet to any great extent been indoctrinated into the modern methods, and the lower classes in our large cities still largely trust their obstetric cases to midwives. This fact gives emphasis to the declaration of Dr. Lusk at a recent medical meeting that the metropolitan lying-in hospitals, once pest-houses for puerperæ, are now the safest places in which women can be confined, for the mortality from childbed fevers is less than one per cent.

[Since this article was written I have been informed by Professor W. L. Richardson that the above experience of Dr. Jacobi is by no means exceptional. Dr. Richardson assures me that his consultation practice averages one case of puerperal septicæmia a week. These are mostly the patients of physicians who take no pains to obtain disinfection of the hands and person; many of these puerpuræ belong to the lower walks of life and live under bad hygienic conditions.]

NATURE OF PUERPERAL INFECTION.

It is only within the past twenty years that anything positive and definite has been known of the nature of puerperal infection. Hippocrates knew puerperal fever, and described it as erysipelas of the womb.† Various theories were subsequently propounded as to the causes of this disease, among the most plausible of which were such as regarded it as due to a suppression of the lochia, to the absorption of effete, putrid matters at the placental site. Harvey, one of the old writers on obstetrics, whose treatise in Latin on the "Management of the Puerperal State" has come down to us as a sort of medical curiosity, attributed great importance to the lochial discharge, as being *par excellence* nature's detergent agency. When the lochia are suppressed, the blood becomes poisoned with phlogistic elements; on the condition of the lochia we base our prognosis of the case.‡

As to the contagiousness of puerperal fever, whether epidemic or sporadic, this was admitted by many of the old writers. Thus, Denman, alluding to epidemics which prevailed at the Hôtel Dieu, Paris, in 1664, in the London hospitals in 1778, etc., regards the contagious nature of the disease as fully proved, and affirms that it "has often been conveyed by midwives and nurses from one patient to another." The following passage, from a work published nearly a hundred years ago, is worth reproducing, for subsequent experience has only confirmed and elucidated what Denman then wrote:§

"This fact [that of contagion] explains the reason why persons practising for many years with the most enviable success have at one or more periods of their lives, without any change in the principles of their practice, met with a number of unfortunate cases, when, perhaps, an adjoining neighborhood has been entirely free from such diseases. Of this I have known many instances.‖ Nor should this subject remain a barren speculation; but, according to the value set upon reputation, teach those who are engaged in the practice of midwifery the impropriety of their attending patients in fevers and other dangerous diseases, if it can be possibly avoided; and to use every precaution that they do not carry contagion from one patient to another. The nature and power of the contagion seem not to be perfectly understood, and it may exist in many diseases in which it has not yet been suspected."

At the epoch when Denman wrote, the living nature of contagion was not suspected, the names bacteria, microbes, germs, etc., were unknown to science. Pathologists and physiologists no doubt puzzled themselves in

* *Boston Medical and Surgical Journal*, May 29, 1890 ("Report of the Association of American Physicians").

† "Si mulieri pregnanti fiat in utero erysipelas, lethale est."—HIPPOCRATES.

‡ "Uterus a placentæ separatione, præcipue violenta, excoriatur, tanquam ulcus ingens internum, lochiorum liberiore emanatione deturgitur et mundificatur. Idioque per excreta de puerperæ sanitate aut discrimine statuimus" (Harvey, "Exercitatio de Partu," p. 556).

§ "Introduction to the Practice of Midwifery," London, 1800.

‖ The annals of obstetrics are full of examples where puerperal fever has followed in the track of a particular accoucheur until his path has been a "highway of sepulchres." See the valuable monograph, "On Puerperal Fever," of Dr. Oliver Wendell Holmes (1844); also Meigs "On Child-Bed Fever;" Ramsbotham's, Meigs's, and Churchill's "Obstetrics;" Copeland's "Medical Dictionary," article "Puerperal Fever," etc.

trying to account for the fact of a poison multiplying itself in the blood, and able to infect and destroy thousands of individuals. Are there any chemical poisons not of an animated, figured nature, but of a soluble kind, which are known to produce similar results? I think that, in the light of modern science, we may answer this question in the negative. Moreover, the contagium of so many infectious febrile diseases of men and animals has been discovered, and the bacteria identified, that we might be warranted by an effort of inductive reasoning in affirming that all infectious diseases are microbic; or, to quote the words of Bouilly, that "contagion is the function of a living element."*

But this is not all; there is evidence that the specific contagion of the puerperal diseases is now known. It will not be amiss to sum up the principal data connected with this history:

Mayerhofer was among the first to find micro-organisms in purulent fluids from the pleural and peritoneal cavities of puerperal patients; these appeared as small round bodies, arranged as threads. Coze and Feltz about the same time (in 1869) detected in the blood of puerperal fever patients round corpuscles arranged in the form of chains. Waldeyer found the same in the parametrium and in pus from the peritoneal cavity; he describes these micro-organisms as round-shaped micrococci in the form of chains. Orth, Rindfleisch, Heiberg, Klebs, Wolff, and Litten confirmed these observations in the following years. Steurer "was able to follow the round, chain-like micrococcus from the diphtherial lining of the endometrium through the uterine lymphatics into the peritoneal cavity." Fraenkel several times found them in peritoneal exudations. In 1884, Lomer, from whose exhaustive article in the *American Journal of Obstetrics* for July, 1884, we quote these facts, identified the same microbes in three puerperal cases, which occurred during the winter of 1884 in the University Polyclinic which is connected with the Woman's Hospital in Berlin. In one patient the blood was literally swarming with micrococci in chains; in all, these micro-organisms were discovered in the exudations and in the diseased organs after death.

Passet has endeavored to classify these round micro-organisms, which are prone to assume the form of clusters or chains; and it seems to be now proved that the streptococcus and the staphylococcus (pyogenes aureus, pyogenes albus, citreus, etc.) seen in puerperal exudations are common to all acute abscesses and suppurations, and are the ordinary septic bacteria. Nay, more, traumatic or surgical fever is caused by the same micro-organisms, and under peculiar circumstances they seem to have the power to penetrate the pores of the skin, and cause furuncle and anthrax.

At the bedside, as Lomer remarks, erysipelas and puerperal fever are quite different diseases, but in both we find morphologically the same micrococci, and they give similar results with vaccination. The more recent researches of Vidal (in 1889) confirm this view, and make it almost certain that the micrococcus of puerperal fever, of erysipelas, of puerperal mastitis and phlebitis, is one and the same.

Although the microbic element of puerperal infection presents itself under different forms (staphylococcus, streptococcus, etc.), there is no proof that the morphological differences imply differences in nature and pathogenic action, and Chauveau and Arloing maintain with great probability that it is always the same microbe under different states of development. More, doubtless, depends on the organic soil (*terrain*) and susceptibility of the patient than on any particular virulence of the microbe, as to what morbid changes shall be effected.†

Besides the micrococci, different kinds of linear bacteria have been found in puerperal exudations in combination with the other septic bacteria; thus the septic vibrio and the *bacillus pyogenes fœtidus*. Inoculations in animals have been found to produce acute abscesses and blood-poisoning.

As for the terms to be employed to designate the general phenomena of blood poisoning, I believe, with Delafield, that the familiar word septicæmia includes everything, and that this word may be used as synonymous with pyæmia, septo-pyæmia, inflammatory fever, surgical fever, traumatic fever, suppurative fever, and purulent infection.

Whether there be a mild form of septicæmia caused by the absorption of putrid elements, the products of the bacteria of putrefaction, without any co-operation of the pyogenic micrococci,—a form of blood-poisoning, called by Matthews Duncan *sapræmia*,—

* "La Nature Vivante de la Contagion," Paris, 1884.

† *Vide* Hallopeau, *Pathologie Générale*, article "Septicemie."

it remains for bacteriologists to determine. Whether this be so or not, the proposition still remains good: *No bacteria—no infection, no septicæmia, no suppuration.**

PREDISPOSING CONDITIONS.

I shall not here enter into the discussion of the question whether puerperal infection may ever be autogenetic as well as heterogenetic. Certainly putrefying placental *débris* or blood clots and foul lochia may give rise to a poison which, when absorbed, will cause symptoms undistinguishable from septicæmia, and it is natural to suppose that in such cases the blood-poisoning is autogenetic. Every physician of any experience has seen such cases; often the fever is very slight and transient, and subsides as soon as the uterus is washed out; in other cases, the source of septic infection continuing, violent symptoms of purulent infection with metastatic abscesses follow. Practically, microbes are concerned in the autogenetic as in the heterogenetic forms, and there is reason to believe that if the antiseptic treatment be rigidly carried out from the first, there will be no morbid manifestations whatever.

Certainly, in whatever manner the disease may start, the round-cell bacteria are found abundantly in the tissues and exudations of all grave cases, associated with various linear forms, and when inoculated in animals they give rise to similar symptoms and lesions. Some of the most striking experiments are those of Pasteur, D'Espine, and Schüller. The former produced septicæmia in animals from the product of his cultures of the round micrococcus. Schüller found that subcutaneous injections of septic material in female animals, about the time of or just subsequent to delivery, produced a diphtheritic ulcerative process on the uterine surface, which determined the separation of the placenta; diphtheritic patches were also found in the cornua of the uterus.†

If the question be asked, "How do the bacteria act in producing these morbid results?" it must be confessed that a perfectly satisfactory answer cannot yet be given. It may be affirmed that their presence determines mechanical irritation, inflammation, and even gangrene of parts in which they congregate; that they secrete poisons (ptomaïnes), which paralyze the heat-regulating and other centres of innervation; that they cause gross changes in the blood, such as corpuscular disintegration, decrease of fibrin, diminution of oxygen, increase of carbonic acid; changes not widely differing from those of fermentation and even putrefaction.

The harm which they may do depends:

1. On the quantity of the microbes which invade the organism. It is evident that in the struggle for existence between the living cells of an organic aggregate and the pernicious microbes, the latter will be much more easily overcome if few in numbers; while, like the strongest and best-disciplined army, the healthy living cells may be outflanked and overcome by an ever augmenting foe.

2. On the receptivity of the organism. It would be easy to show that the puerperal woman is in a state of unusual receptivity for septic microbes and their depredations. There is a large open wound at the placental site, with lymphatics and vessels ready to drink up the poison; there are vaginal, vulvar, and perineal lacerations; there are more or less of decidual *débris* and clots remaining behind in the passages after the labor is over; moreover, the blood of the puerperal woman is exceedingly prone to take on septic changes.‡ Nevertheless, despite all this, there are many

* It is the recorded opinion of Rokitansky, Semmelweiss, and others that morbid matter acquired in the dissection of subjects not dying of child-bed fever may be conveyed by the dissector, and excite the disease in a patient delivered by him; and to this, among other causes, was formerly attributed the presence of puerperal fever in the wards of the Vienna Lying-in Hospital. A celebrated foreign practitioner attributed two outbreaks of this disease among his private patients to his having handled morbid specimens just before attending a patient in her accouchement (Churchill's "System of Midwifery," Am. ed., p. 547).

With regard to *suppuration*, I believe that it has been sufficiently established that in any experimentation (whether with croton oil, turpentine, or any other irritant), if rigid pains be taken to exclude all pyogenic microbes, there will be no pus-formation. (See Dr. Hermann Knapp "On Fermentation, Putrefaction, and Suppuration," in the *Boston Medical and Surgical Journal*, January 27, 1887; see also Hallopeau, *Pathologie Générale*, article "Suppuration," and page 321.)

† Lusk, "Science and Art of Midwifery," p. 610.

‡ "When we reflect on the state of the puerperal woman, remembering the condition of the genital organs, the placental wound, the abrasions of the cervix and os uteri, and laceration of the perineum, the wonder is not that so many women have septicæmia, but that so many have escaped the danger from within and without. The important fact to be remembered here is the protective power of the granulations, for, generally before septic poison can be developed, granulations have covered the wounds and abrasions, and thus an impermeable barrier is set up to the entrance of the poison" (Dr. W. B. Rodman, in *N. Y. Med. Record*, 1876, p. 18).

women who prove refractory to the infection. During the prevalence of epidemics, a certain proportion of lying-in patients escape altogether, and those that are infected are not all infected to the same degree. There are certain elements with which we are little acquainted that influence receptivity. The season of the year has a certain influence; the heat of the summer is a factor of danger. Lack of ventilation and other unsanitary conditions, as exposure to sewer-gas or noxious odors; dampness of the habitation; meagre, insufficient nourishment, depressing emotions,—women who have been delivered of illegitimate children are said to be especially liable to puerperal diseases and to succumb,—exhaustion from overwork or repeated childbearing, etc., are all predisposing conditions.

"Puerperal women," says Doleris, "are wounded women, and in addition they have been subjected to hemorrhage, shock, weakness following on prolonged labor, and their blood and tissues generally have been peculiarly modified. Here there are a certain number of predisposing causes. Further, still, the nature of the wound, its situation, the presence of materials in a state of disintegration or decomposition, the retention of placental or decidual *débris*, the presence of external wounds on the vulva, in the vagina, in a position peculiarly favorable for the entrance of germs, even before delivery. Such, among others, are additional predisposing causes. We would not thus imply that always and in every situation infection proceeds from local lesion of the wound, for this would be to ignore the simplest undoubted pathological principles, but unquestionably the cases of infection from the uterus are the most frequently observed. It is only exceptionally that infection occurs by other routes."

This is undoubtedly the prevalent view of to-day, and accoucheurs who scrupulously practise antisepsis are less and less disposed to believe in infection except through the uterine wound. That, however, in exceptional cases, owing to greater virulence of the poison, owing to greater susceptibility of the lying-in woman, the pathogenic agent may obtain access to the blood and tissues of the patient through other channels,—as by the air of respiration,—seems probable, if we may trust the experience of some practitioners.

MANIFESTATIONS OF PUERPERAL INFECTION.

As has been said above, the time has not yet come when puerperal disorders can be differentiated according to a particular microbe which occasions them. Facts compel us to assume a very close etiological relationship between the puerperal diseases and the zymotic diseases (especially typhus, diphtheria, and scarlet fever), cadaveric poisoning (from dissection wounds), and erysipelas. Regarded from the stand-point of etiology, puerperal fever must be regarded as ONE, now taking on a mild aspect, and soon disappearing, as the organism, but slightly impregnated with the virus, successfully resists and expels the microbe invaders; at another time appearing as a severe sporadic or epidemic colpo-metritis, para-metritis, or peritonitis,* when the microbes, like a vast army, have taken possession of the organism, and the natural forces, aided by all the resources of medicine and surgery, are taxed to their utmost; at still another time appearing in a form of the greatest malignity, when, as if in consequence of some unexplainable susceptibility, the patient is as tinder to the spark, when the organism is overwhelmed from the start, and death is inevitable. All the infectious diseases manifest themselves at some periods in a more virulent form than they do at other times. Thus, epidemics of scarlet fever, measles, small-pox are sometimes very mild, on other occasions are characterized by great gravity; and that the same should be true of puerperal fever is strictly in accordance with analogy. More, perhaps, depends on the susceptibility of the patient—on the nature of the culture soil—than on the virus, and that under circumstances of peculiar vulnerability of constitution (overcrowding, bad aëration, insufficient alimentation, etc., being factors) the puerperal poison may find access to the deep tissues and humors of the lying-in woman before there has been any abrasion or other solution of continuity, is no more strange than that persons broken down in health from diabetes or any other morbid condition should become victims of furuncle or anthrax, though the microbe must have penetrated the unbroken cuticle.†

* "Epidemics," says Charpentier, "are purely the result of a wider dissemination of the contagion, the cause and mechanism remaining the same. In order that an epidemic may exist, we need the infectious spark in the shape of the germ, and the diffusion of this germ. Now, one single circumstance brings together these conditions, and that is *overcrowding*. In overcrowding, 1, the morbid germs are multiplied; 2, the points of contact are thus increased; 3, there is insufficient aëration, oxygenation; 4, the resistance of the woman to disease is thus lessened."

† Doubtless by the pores and follicles. If through the digestive tube, why may not the microbes of puer-

In mild cases of septicæmia there may be no visible local lesions; there is a febrile rise for a day or two, with headache and malaise, then *restitutio ad integrum*, rapidly takes place. In severe cases, local inflammations—diphtheritic, purulent, gangrenous—predominate; the fever is excessive, there is disturbed involution of the uterus, with sensitiveness and pain over that organ, the constitutional disturbances are intense. Steurer's observations* are of the greatest interest in this connection.

His cases, which occurred during the epidemic of puerperal fever at Bellevue Hospital, New York, in 1874, "all presented diphtheritic patches about the vulva, or upon the mucous membrane of the vagina and uterus. . . . From the patches the bacteria could be traced between the muscular fibres and deep down into the canalicular spaces of the connective tissue, where their presence gave rise to cellulitis. From the canalicular spaces they entered the lymphatics, with resulting lymphangitis. In many cases the lymphatics could be traced along the broad ligaments to the ovaries (puerperal oöphoritis), and into the subperitoneal tissue of the lumbar region. By perforation of the walls of the lymphatics which directly underlie the peritoneum, they made their way into the peritoneal cavity, and excited pyæmic peritonitis. . . . The wide stomata upon the abdominal surface of the diaphragm allowed the facile entrance of the organisms into the lymphatics. Waldeyer found in diaphragmitis the lymphatics of the diaphragm filled with bacteria. And thus, following the lymphatic system, if we only admit that the round bacteria are the carriers of sepsis, a fact which hardly admits of dispute, the frequency in severe types of puerperal fever of inflammations of the serous membranes—of the peritoneum, the pleura, the pericardium, and the joints—finds an easy explanation. . . . Sometimes the bacteria pass directly into the veins, and give rise to phlebitis. . . . When the bacteria enter directly into the circulation, they sometimes, in passing through the heart, adhere to the endocardium and valves, causing exudation, ulceration, and decomposition, and thus give rise to the so-called endocarditis ulcerosa puerperalis."

peral fever? I have seen patients die by the extension and gravity of a carbuncle. Now, as far as microbiology can tell us, anthrax is caused by the same streptococcus that causes septicæmia.

* Cited by Lusk in his "Science and Art of Midwifery."

PROPHYLACTIC TREATMENT.

A knowledge of the causes of puerperal infection irresistibly suggests the proper prophylactic treatment.

The indication is to exclude all bacteria; *no bacteria—no infection, no putrefaction, no suppuration.* The same general principles of asepsis, which have given such uniformly good results in surgery, must be applied in all their rigor to obstetrics.

Semmelweiss may be regarded as the father of modern antiseptic midwifery. His work, in which he shows that puerperal fever owes its origin to the absorption of decomposing organic matter and is only a form of pyæmia, was published in 1847. He afterwards added that this disease might also arise from the decomposition of the lochia, blood clots, necrosed or placental tissue. Hence if obstetricians would prevent puerperal fever in their patients, the maintenance of absolute cleanliness, and sometimes disinfectant ablutions and irrigations, become necessary.†

It would take too much time to go fully into the history of antisepsis in midwifery. Such treatises as that of Paul Bar, "On Antiseptic Methods in Obstetrics;" H. J. Garrigues, "On Antiseptic Midwifery;" Dr. Robert Kucher, "On Puerperal Convalescence and the Diseases of the Puerperal Period;" and the recent expositions of Lusk, Charpentier, Winckel, Playfair, Leishman, Barnes, Parvin, etc., in their respective text-books, are, or ought to be, in the hands of all practitioners. Especial interest in this country has been directed to the subject since the publication of the important paper read by Dr. T. Gaillard Thomas before the New York Academy of Medicine in 1844, in which rather extreme measures of prophylaxis were advocated; since the discussion which followed the reading of that paper in 1884 and in 1885; since the promulgation of the results obtained by Dr. Garrigues from antiseptic midwifery in the lying-in wards of Maternity Hospital, New York; by Dr. W. T. Lusk, in the Bellevue Hospital; by Dr. W. L. Richardson, in the Boston Lying-in Hospital; by Dr. B. C. Hirst, at the Maternity Hospital, Philadelphia; by Tarnier, at the Paris Maternity; by the chiefs of the obstetric departments in the hospitals of Vienna, Berlin, and other foreign cities. These results are

† See a valuable paper in the *Boston Medical and Surgical Journal*, January 27, 1887, by Dr. W. L. Richardson, "On the Use of Antiseptics in Midwifery Practice."

well summed up by Dr. Lusk in a paper read before the Association of American Physicians, May 13, 1890. Only one expressive sentence will be here quoted: "Hospitals which were formerly the seat of violent outbreaks of puerperal fever are now the safest places for women in labor."

The order of events in the history of antiseptic midwifery are as follows:* 1. The institution of antiseptic prophylaxis (by means of chlorine-water), by Semmelweiss, in 1847. 2. The creation of antiseptic surgery, by Lister, in 1866. 3. The application of antisepsis to midwifery, by Stadfeldt, of Copenhagen, in 1870, and the use of carbolic acid as the best antiseptic. 4. The introduction of bichloride of mercury into obstetric practice as a better antiseptic than carbolic acid, by Tarnier, about 1880. Since the beginning of the last decade the leading hospitals of this country and the old world have adopted the essentials of what is now known as antiseptic midwifery.

Technique.—The accoucheur of to day has a responsibility resting upon him from which the accoucheur of a former age was free. He feels, in a sense which he never felt before, the greater knowledge of the present day dawned upon him, that the life of his patient is in his hands. If he do not carry infection to the patient, and if he employ the proper means to make the patient and her environment aseptic, there is a fair certainty that restoration will take place normally. Knowing that in the great majority of cases of puerperal septicæmia the patient is infected by the hands or instruments of the accoucheur, he will take the utmost pains that both hands and instruments are both clean and aseptic. Before making an examination, the sleeves are rolled up above the elbows, and the hands and forearms are thoroughly scrubbed with soap and water; the nails and the spaces under them and the creases about the skin are cleaned with a stiff brush. Then the same parts are soaked one or two minutes in a sublimate solution, 1 to 1000. Paul Reynier adds that the hands and forearms thus disinfected should not be wiped, unless one is sure of the aseptic condition of the towel.† The examining finger may then be greased with carbolized vaseline, or with an ointment composed of 1 part eucalyptus and 7 parts vaseline; whenever afterwards an examination is made, these antiseptic precautions must be repeated.

Instruments (when used) must first be cleansed in soap and water, then dipped in boiling water, which is a sufficiently good antiseptic, and kept till needed in à 1 to 20 carbolic solution. Before applying forceps they should be greased with eucalyptus vaseline. Garrigues recommends carbolized glycerin.

During the first stage of labor, the patient should be disinfected by a vaginal injection of corrosive sublimate, 1 to 3000, about a quart being used for this purpose; the external genitals, hips, nates, and lower abdomen should be washed with a somewhat stronger solution,—1 to 1000. For convenience, the physician may carry in his satchel little packages, each containing fifteen grains of corrosive sublimate; one of these to a quart of water makes a solution of the strength of 1 to 1000. Or the antiseptic tablets of the pharmacists may be employed; each tablet contains seven and a half grains of the sublimate. A basin containing the stronger (1 to 1000) solution should be kept in a convenient place in the lying-in room; into this the physician should dip his hand before making an examination. It is needless to say that vaginal or uterine injections should be made with syringes that have glass or rubber suction-tubes and canulæ, as metal corrodes when in contact with corrosive sublimate. Moreover, only the weaker solutions (1 to 3000 or 1 to 4000) should be used for such injections. The injection may be given with the patient lying on a bed-pan, or (in the absence of this) on a thick folded blanket, and she should be turned upon one side, or be made to sit up for a minute after the injection, that the solution, after distending the vaginal pouch, may all run out, as cases of poisoning from absorption of sublimate solutions are on record.

This one injection before delivery is generally sufficient. Some authorities recommend a carbolized or sublimate douche immediately after labor, and if this be used hot, it has a favorable effect in stimulating uterine contractions and stopping flowing.

In the paper read by Dr. T. G. Thomas before the New York Academy of Medicine, December 6, 1883,‡ that eminent authority advised to repeat the vaginal injections every three hours before, and every eight hours after, labor. The voice of the medical profession has very generally been against interference to this extent with what may be called a natural physiological process, and most ob-

* Garrigues, *loc. cit.*

† "Recent Conference on Asepsis," *Bull. et Mém. de la Soc. de Méd. pratique.*

‡ *N. Y. Med. Journ.*, December 15, 1883.

stetricians now content themselves with one antiseptic injection before labor (unless the first stage be unusually long and tedious), and none after labor.* If, however, the lochia should become at all offensive, and especially if any febrile symptoms should arise, the vagina and uterus should at once be washed out with a carbolized solution (two and a half per cent.), or with a sublimate solution,—1 to 4000. This injection should be repeated every six or eight hours, till the lochia lose their fetor, and till all febrile symptoms disappear. Dr. W. L. Richardson speaks favorably of iodoform pencils (crayons of cocoa-butter incorporating ten grains of iodoform), which may be carried up into the uterus night and morning and left there.

The placenta, if it does not speedily follow the fœtus, should be delivered in as antiseptic a manner as possible. Credé's method is recommended by Richardson and Grandin. Then the external genitals should be thoroughly cleansed, soap and water and the sublimate solution being employed, any perineal lacerations closed with antiseptic catgut, and an aseptic pad applied. These pads may be prepared by soaking common napkins in a sublimate solution (1 to 3000), and allowing them to dry. The nurse should be instructed to have a quantity of these napkins ready. "The object of these pads is to seal the entrance to the vagina and uterus by a germ-proof protective against the attacks of septic bacteria from the air and other external objects."† Oakum has been used by some obstetricians, and seems to answer a very good purpose.

The pad recommended by Dr. W. L. Richardson resembles Liston's "protective," and as much stress is laid on this part of the dressings, especially by those that omit the douches after the third stage of labor, I will describe Dr. Richardson's method of preparing this pad:

A strip of Canton flannel (nineteen by four and a half inches) is placed upon a table, with the soft side uppermost. On the centre of this is laid a piece of carbolized cotton (eleven by four and a half inches), about half an inch in thickness when not compressed. Over the centre of this is a piece of oiled muslin (nine by four inches). On this is placed the pad itself, which is made of what is known as absorbent scrap or waste closed up in cheese-cloth, and of a size sufficient to cover the oiled muslin, and about half an inch in thickness before it is wet or compressed. This pad, before using, is dipped in a solution of corrosive sublimate (1 to 3000) and dried. Whenever a pad with its binder is removed and a fresh one substituted, the old pad, including the Canton flannel, etc., is burned up.

In the discussion which followed Dr. H. F. Adams's paper before the Essex North District Society, one of the speakers (Dr. R. C. Huse) stated that he had been in the habit of using two towels. One of these he dips into a 1 to 1000 solution, and after wringing it out with his hands, he folds it into a square pad, and places it over the vulva. The second towel he likewise wrings out of the antiseptic, and folding it once likewise, passes it between the legs, and pins it to the binder at front and back.

A Word about the Environment of the Patient.—The room occupied by the puerpera should be clean and well ventilated, and should not be in propinquity to cess-pools, pig sties, or stables. In hospitals it is quite possible to carry out Dr. Thomas's requirement that the room in which the confinement is to take place should have the floor, walls, and furniture thoroughly washed with a ten per cent. solution of carbolic acid or mercuric chloride, 1 to 1000, and the bedstead and mattresses should be sponged with the same solution. Curtains, carpets, and upholstered furniture should be dispensed with as far as possible.‡

Ought the Physician when attending Contagious Diseases to undertake Confinement Cases?—This is a question which, before the days of antiseptic midwifery, would have been answered unqualifiedly in the negative. And now, without the most rigid attention to personal cleanliness, and an entire change of clothing, it would not be right for the physician to go from a case of scarlet fever, diphtheria, especially erysipelas, or from a post-mortem, to a case of labor. I believe, however, that such thorough disinfection of the person can be obtained that it will be safe for the physician who is attending such diseases to enter the lying-in room. Every article of clothing

* It may, however, be affirmed that physicians in private practice only exceptionally employ the vaginal douche as a routine practice, and that the intrauterine douche is now never used except when there is especial reason to fear that infection has entered the uterus. "The douche repeated at short intervals," says Lusk,* "is not unattended with drawbacks. It interferes with the localizing processes by which most of the pelvic inflammations become self-limited; it helps to extend the morbid condition of the uterus to the tubes, and, if continued long enough, paralyzes the uterine walls."

† Dr. H. F. Adams, *Boston Med. and Surg. Journ.*, March 1, 1888.

* Lusk, "Antisepsis in Midwifery," *Medical News*, May 31, 1890.

‡ Dr. T. G. Thomas, in *N. Y. Med. Journ.*, December 15, 1883.

must be changed, the whole body, including the hair and whiskers, must be washed, then bathed with a strong boric acid solution, as Thomas recommends; then especial attention must be given to the disinfection of the hands, fingers, and finger-nails in the manner before indicated.

Among the prophylactic means should be included a suitable tonic and fortifying regimen, especially needful when the patient has been exhausted by protracted labor or by hemorrhage. Quinine, wine, and even brandy may be indicated, with such nutrients as the stomach can bear; the vital forces are thus rallied, and the reparative processes favored. Ergot, given at the completion of the second stage of labor, will promote uterine contraction and vascular tonicity. Some obstetrical authorities advise giving ergot through the entire puerperium.

Many physicians may think antiseptic midwifery encumbered with too great fussiness of details, but there is not one of these details but is important, and it is quite possible that valuable lives may now and then, in the lifetime of even a country physician, be saved by rigid attention to such minutiæ as have been above set forth.

CURATIVE TREATMENT.

In sapræmia, irrigation and cleansing of the utero-vaginal cavity may be about all that is needed; the headache and fever may demand a saline draught of acetate of ammonium or nitrate of potassium, and an acetanilid tablet. Quite often I have seen the fever rapidly subside after the administration of a hot carbolized uterine douche. Sapræmia is kept up by a continuous supply of the poison. To stop the supply is the problem of cure.

Of course, it may not be possible to wash out the peccant *débris*—which may be a blood clot, a shred of membrane, a small bit of placenta—by deodorizing irrigations, and it may be necessary to introduce the finger, or even the whole hand, well disinfected, into the uterus, and remove the offending cause. Then the washings must be repeated three or four times a day, till all fetor of the discharges has disappeared and the temperature has become normal. Intrauterine injections, when needed, must be made by the physician, and not trusted to the nurse.

I think that cases of sapræmia in connection with abortion are more common than with labor at full term, for the reason, probably, that abortions are frequently neglected, often lacking the ministrations of a physician, till some septic complication arises. It has been my lot continually to see cases of sapræmia from retention and decomposition of the placenta. I have seen pyæmic complications follow such cases, and have found reason to doubt whether any hard and fast line exists between sapræmia and septicæmia. A case may begin as sapræmia and end as pyæmia. The following case, from my notebook, is in point:

Mrs. F., Hampton, N. H., aged 30 years, was delivered of a dead fœtus at the end of the fourth month, May 1, 1889. Was seen by Dr. Fellows, of Seabrook, on the 7th, who found a marked febrile condition, tender abdomen, considerable prostration, but regarded it as a case of sapræmia. He removed a putrid placenta. This patient was living in a retired country place; the surroundings were as healthy as could be imagined; all ordinary causes of infection were excluded; the sister of the patient was alone with her during her miscarriage.

On the 15th I saw Mrs. F. along with Dr. Fellows. She had had a series of chills; there was fever of marked hectic or remittent character; great nervous prostration; pulse 140 per minute. I opened a large abscess on the back of the arm above the left elbow, giving vent to a pint or more of foul pus. There seemed to be another abscess forming in the left thigh; left knee swollen and painful. There was an offensive ichorous discharge from vagina. I recommended a hot sublimate douche — 1 to 2000 — every morning, and the application after the douche of a crayon of iodoform, 20 grains, to be passed up to the fundus and left there. Gave the douche and applied the crayon before leaving the house. Prognosis unfavorable.

May 20.—Again visited Mrs. F. with Dr. Fellows. Condition not improved. Opened an immense abscess at the upper part of the thigh, giving issue to most fetid pus. Put in a rubber drainage-tube. There seemed to be an abscess forming in the vagina. Temperature still high, ranging from 101° to 104° F. Pulse 140 per minute. Nervousness and pain required sulph. morph., ¼-grain, every six hours. Patient was taking large doses of tinct. ferri chloridi with sulph. quinine, 20 drops of the iron tincture, and 5 grains quinine, every four hours. This treatment was continued by Dr. Fellows for nearly four weeks. Eggs and milk, brandy, beef peptonoids, meat juice, and other nutrients were freely administered.

The abscess in the thigh kept discharging for several weeks.

The swelling in the left knee subsided without suppuration.

The abscess in the vagina was in due time opened by Dr. Fellows. The condition of this patient long continued critical, but she eventually made a perfect recovery.

The diagnosis of septicæmia having been made, the leading indications are—

1. To prevent any further absorption of poison by the lymphatics and veins of the genital passages.

2. To relieve pain, nervous perturbation, and shock.

3. To aid the natural forces in the contest with the enemy.

4. To combat fever, and meet other symptoms and complications that may arise.

When the disease is declared, douches and ablutions cannot, of course, do the good that is expected of them in simple sapræmia, and may not be needed at all. If, however, there is any fetor in the discharges, and any reason to believe that the uterus and vagina are still the breeding-places of septic organisms, the irrigations should still be practised twice a day. A vaginal injection is always harmless, and if the lochia are suppressed, the hot douche may favor their return. Intrauterine douches may do serious harm, and should not be resorted to unless there is decomposing *débris* to be removed. All danger may be avoided by using (as Dr. T. G. Thomas advises) a large injecting-tube, which cannot enter an open-mouthed sinus (and, I may add, that, if there be no orifice on the end of the tube, and the fluid be made to issue from minute orifices on the sides, all the better); by using water warmed to 105° F.; by injecting the fluid through the tube so as to exclude air before passing this up to the os uteri; and by making the injection cautiously and with great gentleness. The os uteri ought to be patulous, so as to allow the injected fluid speedily to flow back; in the event of its being contracted and closely hugging the canula, it should previously be dilated by some mechanical means. A fountain syringe, which gives a continuous stream, is preferable to a Davidson syringe.

Cases of pyæmia and septicæmia, says Matthews Duncan, are to be managed rather than treated. We cannot arrest or even moderate the storm, but we may guide the bark through it.

An important indication is to relieve pain and nervous disturbance. For this object there is nothing better than a hypodermic injection of morphine. The ⅓ grain tablet triturates of the manufacturing pharmacists are convenient for this purpose; or Magendie's solution may be used, which contains 16 grains sulphate morphine to an ounce of distilled water—10 drops of this solution is enough for an injection in ordinary cases. The hypodermic may have to be repeated twice or three times a day. Where there is a complication of peritonitis, the pain is a formidable symptom, and must be kept in abeyance by frequent large doses of opium. My own custom has been to begin with a subcutaneous morphine injection, and to keep up the effect by grain doses of solid opium given by mouth. I have seen cases where 2 grains every hour were barely sufficient to control the pain, but quantities much larger than this have been given with impunity.*

In the pyæmic variety there is rarely severe pain, and opiates are of little use, and may often be omitted altogether.

The third indication is to aid the natural forces in the contest with the enemy.

The puerperal fever patient is a person whose constitutional powers have been impaired by various causes which have rendered her susceptible to septic agencies. She is, moreover, still further depressed by the multiplying virus in her system, and an "antiphlogistic" or spoliative treatment would be eminently improper. While blood-letting is not to be thought of, active purging, with a view to elimination, is not justifiable. It is only where there is constipation and fæcal accumulation that purgatives are required, and then mild laxatives should be chosen,—cascara sagrada, castor oil, castor oil and calomel (an ounce of the former to five grains of the latter, rubbed up with twenty grains of bicarbonate of sodium).† The occurrence of a diarrhœa (whether accidental or provoked), where there is peritoneal inflammation, is injurious rather than salutary, and is not to be encouraged. Milk, beef tea, beef peptones, wine, and other alcoholic stimulants are to be regularly administered. Quinine in pretty

* Thus, a patient of Professor Alonzo Clark took the equivalent of nine hundred and thirty-four grains of opium in four days; and one of Lusk's, at the Maternity, the equivalent of over seventeen hundred grains of opium in seven days (Lusk's "Midwifery," p. 645).

† Fordyce Barker.

large doses is believed to promote tone and arrest destructive metamorphosis; these large doses are also needed for antipyretic effect. The tincture of chloride of iron has considerable reputation as an internal antiseptic; it is much given in diphtheria, erysipelas, and surgical septicæmia, and seems to be especially valuable in purulent infection. The larger the doses that can be borne the better; 20 drops every two hours freely diluted, with five grains of quinine in capsule, would not be overdosing in malignant septicæmia. In the case above reported this quantity (one drachm quiniæ sulph., four fluidrachms tinctura ferri chloridi, in divided doses daily) was borne for many days, and the attending physician was inclined to impute the recovery of the patient largely to this medication.

But, unfortunately, many patients cannot take these doses, nor will the irritable stomach bear the nourishment that is required. The physician may be compelled to resort to ice, iced champagne, bismuth, and hydrocyanic acid to allay vomiting, and the patient must be fed with liquid nourishment by the teaspoonful every few minutes till such time as the rebellious stomach will accept more food.

Febrile symptoms are best met by antipyrin in 10-grain doses every two hours, or by acetanilid or phenacetin in 5-grain doses till the temperature falls to some point near the normal. Quinine, in the same dose, may be the preferable antipyretic, especially when there are chills and sweating, announcing the presence of pus. Thomas advises to give 15 grains of quinine night and morning, or salicylate of sodium in full doses.

Abscesses are to be freely opened, and if necessary to give vent to matter, one or more drainage-tubes should be inserted.

In cases of peritonitis, flannels wrung out of hot water, turpentine stupes, or linseed poultices, are always useful.

Puerperal mastitis and phlegmasia alba dolens are to be treated on general principles.

I had intended to append notes of several cases occurring in my own practice. They are, however, records of past neglect and ignorance rather than illustrations of antiseptic midwifery. There are some thick heads through which a new, fertile idea works its way slowly and painfully; I think that mine is one of that kind. But this paper has already exceeded a reasonable length.

NOTES ON EUPHORBIA PILULIFERA.

By Rosecrans Workman, M.D., Keyser, W. Va.

THE natural order Euphorbiaceæ belongs to the class of exogenous plants, and is represented by herbs, shrubs, and trees. Acrid and deleterious properties pervade this large order, chiefly resident in the milky juice. But the starchy accumulations in the rhizoma, as in the cassava of tropical America, are innocuous when freed from their poisonous juice by washing and heating. The starch thus obtained is the cassava, which, when granulated, forms the tapioca of commerce.

The fixed oil it frequently contains is bland, but the oil procured by expression abounds in the embryo of the seeds, and contains active properties. Some plants of the family are virulent poisons, as the *Hippomane manicella* of the West Indies. A drop of the juice blisters the skin, and it is said even to destroy persons who sleep under its shade. The *Ricinus communis* and *Croton tiglium* belong to this order. The principal genus in northern temperate climes is Euphorbia. These plants are distinguished by having the three-lobed ovary raised out of the cup on a curved stalk, its three short, two-cleft styles making six stigmas. The fruit, when mature, bursts into the three carpels, which split into two valves each, thus discharging the seed.

The drug referred to is obtained from a species of this genus,—*E. pilulifera*.

I have notes of twenty-seven cases in which the drug was given. In thirteen cases of hay asthma, prompt relief was obtained in nine. The sneezing and discharge was diminished or stopped, and the congested sensation relieved. In one of the other cases partial relief was obtained, and in the remaining three cases the results were negative.

The fluid extract was administered in doses of 30 to 60 minims every four hours. In nearly all the above cases iodide of potassium and arsenic had been previously used.

In nine cases of coryza good results were obtained in six, the sneezing and rhinal flow ceasing or diminishing within thirty-six hours after the administration of the drug was begun. The doses were repeated every three or four hours.

In five cases of asthma, of frequent recurrence and long standing, marked relief was experienced in one case, the dyspnœa soon disappeared, and the attacks were always

shortened. In the other four cases no good effects were obtained.

I have given it in a number of cases besides the above, and mainly with good results, though I have no notes of them. I have not tried it in cases of bronchitis, but think from its action that it would be applicable. It has a sedative effect on the mucous membranes of the nose and throat, and in many cases diminishes the discharge of mucus from these surfaces.

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*TOXIC EFFECTS FOLLOWING THE APPLICATION OF EMPLASTRUM CANTHARIDIS.**

By Frank C. Bressler, M.D., Baltimore, Md.

ON Sunday morning, April 27, 1890, about four o'clock, I was asked to see a patient who was suffering with severe abdominal pains, and at the same time unable to hold his water. On reaching his bedside, I found the patient a strong, robust German, about 33 years old, suffering terribly with cramps in the lower part of his stomach, vesical tenesmus, and violent pains in his back. I immediately questioned him as to whether he was taking any medicine internally, or if he had used any locally, to which he replied in the negative. Knowing him to suffer with chronic synovitis of his knee-joint, I asked him whether he had applied anything to it, to which he replied that he had been to a physician on the day previous, who ordered him two plasters of Spanish fly for his joint. These were each about six by four inches; they were to be kept on for fourteen hours. Upon examining his joint I found two immense blisters, one on each side of his knee. The one on the outer side measured about six by three and a half inches; the inner one, five by three and a quarter. In addition to these two large ones, I found a smaller one, one by two, in the popliteal space, which, however, had drawn a moderate blister. In response to inquiry, he gave me the following history: On the evening before, about 5 P.M. (Saturday), he applied the plaster as directed by the doctor. In about a half-hour later his knee felt as if it was on fire. This sensation kept up without any intermission until 10 P.M., when all at once the knee stopped paining, and from that time on no more pain was observed in his knee. About this time it was noticed that a frequent desire to urinate appeared, so that it was necessary to micturate every five minutes. At first each effort was attended by a teaspoonful, but gradually it grew less, so that it finally came in drops. At first little pain was noticed with the efforts of urination, but gradually it began to get more painful until it became violent. The pains at first were confined to the bladder. At twelve, midnight, it was noticed that the water was becoming mixed with blood in flakes. The blood increased in amount, so that the urine seemed to be mostly all blood. Strangury well marked. To this was added nausea, with two vomiting spells. These symptoms kept up with increasing energy. About 1 A.M. the pain over the bladder began to spread, so that the whole abdomen became involved. The pains, in place of being of a paroxysmal character, became constant and greater. Now the back began to pain, which pain became so great that the patient's cries brought in the neighbors. This was about 4 A.M. These various pains kept up without intermission until 6 A.M., when the back became somewhat easier. At 8.30 A.M. the patient's condition is as follows: Face pale and haggard, showing traces of great suffering; pulse full and rapid. Complains of terrible pains over his kidneys. The pain is constant, with exacerbations every five minutes. When these exacerbations occur he cries out loudly. Thirst great and constant; mouth and throat dry. On pressure over his kidneys, flinches and complains of great pain. Abdomen painful, so that the least touch produces marked pain. Priapism moderate, but says that no pain or discomfort is experienced. Urine bloody, mixed with flakes of coagulated blood. Upon standing, urine solidifies like gelatin. Vesical tenesmus great, and passes a few drops of urine every few seconds. Morphine sulph. ¼-grain every half-hour was ordered until one grain had been taken, with slight relief to pains. The plasters were immediately removed; surface of skin carefully cleansed of all remaining particles of cantharides, first by soap-water, next by absolute alcohol. After this the blisters were pricked with a needle. The quantity of serum was considerable, amounting at least to one and a half to two ounces of serum for each of the larger blisters. Cloths wrung out in hot water were ordered to be applied to the renal regions every ten minutes. Morphine was administered cautiously. Patient was encouraged to drink plenty of water, and,

* Read before the Medical and Surgical Society, Baltimore, Md., May 1, 1890.

in order to hasten diuresis, liq. ammonii acet., in half-ounce doses every hour, was ordered. Throughout the balance of the day the pains remained very severe and constant; the urine remained bloody.

I saw him again on Monday, 11 A.M., when he reported that last night (Sunday) he began to have severe pains over his left kidney, while previously the right one seemed the more painful. The pain was very severe, with exacerbations, one of these lasting one hour, during which the pain was excruciating. The pains gradually subsided until 3 A.M., when another attack was experienced, this lasting but a half-hour. I found him suffering very much with his back, pain in the bladder, bloody urine; the strangury, however, was much less than yesterday; temperature 99°; pulse good and full; thirst great; had vomited once in the morning; pains in abdomen better; his condition was markedly improved.

Tuesday found him decidedly better; urine still bloody; vesical tenesmus much diminished; says his back feels as if some one had clubbed it; abdomen very little painful, and passes nearly a normal amount of urine.

From this day on he has steadily improved, having no further trouble with his bladder; his urine is not bloody, and no albumen can be detected. The only complaint he suffers with is a diffuse pain in his abdomen. In spite of this heroic treatment, his joint still remains as of old. This case, then, proves the importance that doctors who handle dangerous drugs must be careful to explain explicitly to patients what must be done if any untoward symptoms arise. Had this patient been properly instructed that in case he finds that he must pass water often, and particularly if attended with pain, to remove the plasters immediately, all this poor fellow's pain could have been spared. As it was, this poor man had a congestion of the kidneys induced, which may be the point of departure for some future kidney-trouble. If, however, this patient had had a subdued Bright's disease, the occurrence of this intense congestion might have led to serious results.

Another point of importance is whether it is safe and advisable to order plasters of large size, composed of drugs which, when absorbed, might be likely to induce toxic symptoms. In this case we find that the combined plasters equalled an area of forty-eight inches. Now these were to be left on from fourteen to eighteen hours. I think it not safe to allow so dangerous a drug as cantharides to remain for this length of time upon the person of an uninformed patient, since individual peculiarities are such that one patient may tolerate this amount for twenty to twenty-five hours, while another could not stand five hours without toxic symptoms. Therefore individual idiosyncrasies are not to be lost sight of.

Another point to be observed in ordering plasters is to specify precisely what you want. Upon examining these plasters I found them composed of the ceratum cantharidis spread on adhesive plaster, and, in spreading them, want of proper care in equally spreading the cerate had been observed in that it was much thicker in some places than in others; but the most important is the lack of judgment shown by the pharmacist in the quantity used. Enough cerate was spread on these plasters to make six in place of two. This seems to be the failing of a number of pharmacists, and it seems that they make no difference in the amount used whether toxic or not. In comparing the plasters' effect on the tissues, a contrast was apparent. The little plaster produced a blister without any irritation to the surrounding skin, while the home-made product irritated the whole neighborhood. I think it much safer to use the various plasters made by the numerous reliable manufacturers than to run the risk of some of our home-made plasters, in that the former are always of equal strength, easily gotten, and not so apt to produce toxic symptoms.

CASCARA IN SYPHILITIC ULCERATIONS.

By C. H. Haines, A.M., M.D., Auckland, N. Z.

I BELIEVE that cascara amarga is almost specific in the ulcerations of tertiary syphilis. The number of cases which I have had to treat is small, but the results have been so striking that they have convinced me of its efficacy. In the year 1883 a lady, married, presented herself to me for treatment, stating that she came at the instigation of friends, although she believed that her case was hopeless, as she had had the advice of many physicians and taken a host of patent medicines. She was suffering from what she believed to be rheumatic pains in the limbs and head. I learned, among other things, that her pains were much worse at night. I could not for obvious reasons make very close inquiries, but found sufficient history to cause me to suspect syphilis. I treated her with iodide

of potassium. In a few days her husband came to inform me that her pains had disappeared, and that she had improved wonderfully. I obtained from him the fact that he had had syphilis about ten years previously, but believed himself cured; that he had undergone a short course of specific treatment, which he left off when the primary chancre healed. He had had four healthy children by his wife. For the last two years her health had not been good, and she had been constantly suffering from "rheumatism." I urged a continuance of the iodide. Three months later she returned with the pains and nodes on the skin; these symptoms again yielded to the iodides. About nine months later she returned in a terribly cachectic state,—emaciated, skin of a pale earthy hue, the front of the left tibia was exposed, superficially necrosed, and the stench was horrible. The entire front of the bone between the epiphyses was bared, and sinuses extended down at either side. I treated her with tonics, iodides, iodoform, etc. Nothing did the least good, and she was failing rapidly. I at last determined to amputate as a last resource, but postponed the operation for a fortnight to enable her to pass a menstrual period. In the mean time I gave her some cascara amarga with iodide. She returned in a fortnight, and the change was marvellous. Within that short period her face had assumed the aspect of health. She had gained flesh, lost the cachexia, and had experienced a wonderful change in her sensations. The leg had also improved. All the fetor was gone, healthy granulations were springing up. The diseased flakes of bone were separating. All idea of amputation was gone. She steadily progressed until the supply of the drug ran out. All treatment with this exception remained as before, but progress ceased. It was nearly three months before a supply came to hand, and during that time she gradually failed. She incessantly importuned me to know when the drug would arrive. At last it came. Improvement at once set in, and in a short time she became perfectly well. I saw her on January 7, 1890. She was then in excellent health, and had never had a relapse. She has borne two healthy children since.

The marked instant improvement, the absolute standstill when the drug was of necessity withdrawn, and the start at once made on its re-exhibition, are remarkable evidences of its value in such cases. I have treated seven similar cases since with as good results. The last case within the past month was one of sloughing of palate and back of pharynx, in the hands of a brother practitioner. He had exhausted all orthodox treatment when I was called in. I recommended the fluid extract of cascara amarga with iodide. The results were brilliant. Within ten days sloughs, including half the velum palati, had separated, and the remaining parts were healed, with corresponding improvement in general health. In secondary syphilis I have seen no good follow its exhibition. Its field in syphilis seems to be in the tertiary manifestations with marked cachexia,—cases where mercury could not be given, and where the depressing effect of iodides in other combinations would be dreaded.

If my experience be confirmed in the hands of others, cascara amarga may well rank as a real specific in tertiary syphilis, and much gratitude is due to Messrs. Parke, Davis & Co. for its introduction.

CONSTIPATION: ITS NATURE AND TREATMENT.

By C. L. Dodge, M.D., Kingston, N. Y.

SOME writers make a distinction between constipation and costiveness. This is unnecessary refinement, and serves no good purpose. We understand by either term insufficiency of evacuations from the bowels.

The affection is apt to become chronic; it is then termed habitual constipation. Reference is had in this article to this form of the disorder. Occasional constipation requires only a brief notice.

Constipation as a functional disorder is extremely frequent. "It is probably one of the most common of the slight derangements to which civilized man is subject. Whether savages suffer from it, I do not know, but unquestionably the majority of persons forming a civilized community experience the discomfort" (Beale).*

Various causes give rise to this affection. "Deficiency of bile and the intestinal secretions may enter into the causation in some cases, but probably the importance of this cause of constipation has been overestimated. Constipation is not always present when no bile enters the alimentary canal in certain cases of jaundice" (Flint).† Sedentary habits

* "Slight Ailments," p. 111.

† "Practice of Medicine," p. 470.

are also stated to be a frequent cause. Inattention to the calls of nature is an important factor in the cause of this affection, as it begets a tolerance on the part of the lower bowel, so that a large accumulation of excrementitious material may take place without giving any annoyance to the patient. This accumulation gives rise to overdistention and paralysis of the muscular coat of the intestine, and in this way a chronic condition is established.

Constipation is said to be a cause of piles. I think the converse equally true; defecation being painful, it is deferred as long as possible, and one condition reacts on the other. As Van Buren says,* "The individual who sits straining to get rid of the contents of his large bowel is not aware of the damage he is doing to the parts which he is subjecting to violence, and how surely he is courting prolapsus or piles, if not abscess or fistula. In disregarding the calls of nature few persons recognize the danger they incur of loss of expulsive power from overdistention and consequent costiveness from atony, of inflammation, stricture, and abscess.

"Let us glance for a moment at what anatomy teaches us of this. The muscular coat of the rectum consists of a layer of internal fibres which circle around the gut, and a layer of external fibres which run in the direction of its length. The circular fibres grow larger and more powerful as they approach the lower end of the bowel, and just above the external sphincter muscle they are collected into a mass of some volume, to which the name of *internal sphincter* is given. A large proportion of the external longitudinal fibres, when they reach this ring, double around its lower border, passing upward and inward to seek an insertion into the fibrous substratum of the mucous membrane of the gut, where they are firmly implanted. From this arrangement it results that, when, in the act of defecation, these longitudinal fibres contract, they tend first to draw down and then to evert the mucous membrane of the lower end of the rectum; just what we see happen in the horse. When the evacuation of the contents of the bowel takes place naturally, this protrusion is promptly retracted by the action of the *levatores* and the natural contractility of the parts; but when the evacuation is difficult or impossible, and the effort is prolonged or frequently repeated, the protruded mucous membrane becomes congested and swollen, and is retracted with more difficulty. Perhaps a portion of it remains outside, and then the tumid and tender protrusion leads to the announcement on the part of the patient that he has 'an attack of piles.'"

Dr. Squibb† maintains "that insufficient supply of water or of succulent food is probably the ultimate cause of three-fourths of the cases of ordinary constipation." There also seems to be a predisposition to this affection on the part of some persons from childhood; indeed, we frequently meet with it in early infancy. The various causes enumerated are, doubtless, operative to a greater or less extent; but I believe that in a large number of cases, especially where the affection has existed from childhood, as is frequently the case, there is an inherent weakness of the muscular coat of the rectum.

The so-called therapeutic test is sometimes a valuable aid in diagnosis, as in obscure cases of syphilis or malarial poisoning. The therapeutic test will aid us in arriving at the true cause of many cases of constipation. Aloes in minute doses, as will be shown when the treatment is under consideration, suffices not only to relieve, but to cure this affection in very many instances. The effect of aloes in small doses, as is well known, is to stimulate the lower bowel, especially the rectum. It excites intestinal secretion and increases peristalsis, and thus restores this portion of the intestinal tract to functional activity. This would seem to prove a previous condition of weakness, atony, or loss of function of the rectum. If this condition be relieved, the constipation in the majority of cases is cured.

Constipation is regarded by the laity as a slight ailment, and the average layman labors under the delusion that he is abundantly qualified to treat himself without the aid of a physician. In proof of this, witness the immense sale of nostrums designed to act on the bowels, and the vast fortunes amassed by pill manufacturers, from Brandreth down. Nine times out of ten the medicine is taken in purgative doses, which, causing a reaction, has to be repeated from time to time, until the individual is obliged to resort to a strong cathartic whenever a passage of the bowels is desired. Cases of this kind are the most difficult to treat, and they are very numerous.

The more unsatisfactory the treatment of a given disease, the more numerous will be the remedies therefor. The materia medica

* "Diseases of the Rectum," p. 400.

† *Ephemeris of Materia Medica*, May, 1884.

has been ransacked for remedies for constipation. To enumerate them all would require a small volume. I shall content myself by referring to the more important ones only.

Seidlitz powders, citrate of magnesium, and salts are household remedies. Pills* of all kinds, the composition of which is not known, are swallowed by the thousand, showing the extreme prevalence of this disorder. Mineral waters are largely used, and the sales thereof are increasing every year.

Dr. Squibb believes that plenty of plain water is all that is necessary to effect a cure. He says,† "The very common relief obtained in constipation from the use of the fashionable mineral waters is, doubtless, largely due to the water. As a large proportion of the effective mineral waters contain less than one-half of one per cent. of total solids, it is not difficult to understand that the water is an important, if not the most important, element; while it is very certain that water alone will answer an excellent purpose in the management of constipation."

Powerful purgatives are frequently resorted to; these give temporary relief, but are in no sense curative; the reaction which follows their use intensifies the existing condition. Some persons carry a piece of rhubarb root with them, and eat a little of this occasionally. "Of all agents to be selected for an habitual purgative this is the worst. If once resorted to, its use is necessitated, in consequence of its secondary action, which is to cause constipation" (J. Milner Fothergill).‡ This is more especially the case when the root is carried in the pocket and a small portion eaten occasionally; it soon becomes as necessary as the breakfast or dinner.

The compound licorice powder, the basis of which is senna, has now become a standard remedy for popular use. It is prompt, certain, and quite agreeable, and for children is an excellent combination.

Cascara sagrada is highly spoken of by some practitioners; the fluid extract is extremely bitter, but the elixir and the cordial of cascara are eligible preparations, and I have found them of service in a number of cases, especially with children.

The mineral waters vary greatly in their cathartic properties. Some, as Congress and Hathorn (Saratoga), are only slightly aperient, requiring several glasses to cause the bowels to act; others, like Friedrichshall and Hunyadi Janos, are strongly purgative, one glassful, or even less, taken in the morning, causing prompt and free catharsis. These waters are quite bitter, however, and to some persons objectionable on this account.

In addition to the above measures, local treatment is sometimes advisable; by this I mean the use of suppositories and injections. These aim at producing an immediate evacuation of the bowel, but are in no sense curative, as they do not tend to promote a more regular action in future, which is the chief end desired. Injections of cold water are resorted to by many persons for the relief of constipation, but it soon becomes necessary to repeat the operation every day, and, if persisted in for a long time, the muscular coat of the bowel becomes weakened, and the condition is actually made worse. This method of treatment is not to be recommended in chronic cases. Authority is not wanting in support of this opinion.

Suppositories are also used, especially glycerin suppositories. These are easily introduced into the rectum, and, if retained a few minutes, will cause a thorough evacuation of the lower bowel. In children I find it extremely difficult to prevent the expulsion of the suppository before sufficient glycerin has been dissolved to excite peristaltic action. Glycerin is quite irritating to persons suffering with piles, or where the rectum is hypersensitive from any cause. Before the introduction of glycerin suppositories I made use of suppositories containing ox-gall; one or two grains of powdered ox-gall was put in a hollow suppository. These were usually quite effective, but in some cases slightly irritating to the rectum.

The local measures described above are more especially adapted to cases of occasional constipation, such as result from a change of diet. Free indulgence in milk by those unaccustomed to its use is frequently followed by severe constipation. This condition may exist for several days without causing serious inconvenience, when suddenly relief becomes imperative. In a

* Crittenton's "Catalogue of Patent Medicines" contains over three hundred different kinds of cathartic pills,—that is to say, over three hundred manufacturers are engaged in the laudable occupation of furnishing physic pure and simple to their suffering countrymen. Bitters, to the number of a hundred and fifty or more varieties, are also supplied, most of which are warranted to regulate the bowels, as well as to cure various other ailments.

† *Ephemeris of Materia Medica*, May, 1884.

‡ "Handbook of Treatment," p. 419.

case like this it would be worse than folly to wait for the slow action of physic; immediate relief is demanded. Here copious injections of soap and water, or the use of glycerin suppositories, would be the most rational treatment.

Of all the remedies for the cure of constipation, aloes deserves the first rank. Most of the old writers, and some recent ones, tell us that aloes frequently causes hemorrhoids, and aggravates them when already existing. This is a tradition that has come down from the fathers, and is utterly without foundation. Given in the large doses that were formerly advised, it is no wonder that where hemorrhoids existed they should be made worse. Any powerful purgative is contraindicated in such cases. Fordyce Barker says,* "It would seem, therefore, that the use of aloes for the cure of hemorrhoids in pregnant women would have been suggested by *a priori* reasoning, but I am not aware from anything I have read that it ever has been. I suppose that the general impression that aloes is contraindicated where there is any tendency to piles, and that it possesses emmenagogue properties, has had great influence in preventing this. In my own case the use of aloes for this purpose was the result of gradually accumulating observation rather than from any reasoning on the subject." I have prescribed aloes in small doses for patients suffering from piles time and again, and have never known of any unpleasant effects following its use. "The charge brought against aloes of producing piles is not borne out by my experience" (Fothergill). In truth, given in proper amount, it is by far the best remedy that we possess for constipation associated with hemorrhoids.† Furthermore, the habitual use of aloes does not sensibly affect its activity. It has been facetiously said, *Qui vult vivere annos noe, summat pilulas de aloa.* M. Audhoui‡ considers aloes the typical laxative. He further remarks, "That aloes taken in sufficient dose with food excites the flow of mucus in the digestive tract, increases the secretion of the glands, provokes the contraction of the muscular tunic, and that with order, with moderation, without causing the least malaise."

This last attribute of aloes, whereby the bowels may be acted on thoroughly, gently, and with the nearest approach to a natural movement of any known drug, and without causing the slightest degree of nausea, is the one which commends it most strongly.

The dose of aloes is an important matter. The amount advised in the text-books on materia medica, of 5 to 10 grains, is entirely too large.

Professor Wallace taught years ago that fractional doses of aloes would cure constipation where large doses would fail. He used to tell us to begin with 2-grain pills, and give one at bedtime for a week; then cut these pills in two, or substitute 1-grain pills, and continue with these for another week, and thus continue to subdivide until the patient was taking only ½ or ¼ of a grain once or twice a day.

I followed this plan for several years with success, but since the appearance on the market of granules of aloin,§ the active principle of aloes, I have made use of them, on account of the smaller dose required. As in the case of aloes, the dose laid down in the standard works for aloin is also too large. 1 to 3 grains is more than is ever required for cases of the kind under consideration.

The granules referred to are made from $\frac{1}{10}$ to $\frac{1}{2}$ grain in size. The method of administration constitutes an important part of the treatment. I first order a blue pill, to be followed by a saline, which opens the bowels and makes a good beginning, after which I direct the patient to take two granules of aloin ($\frac{1}{10}$ grain) three times a day, after meals, for a week. If two are not sufficient, three or four may be taken at a time. The following week two granules are to be taken twice a day for a week. After a time—which varies in different cases—it will be found that two granules, taken once a day, preferably at bedtime, will be amply sufficient to secure a perfectly natural movement of the bowels. After finding by experience in individual

* "Puerperal Diseases," p. 33.

† "The general belief that aloes tends to produce hemorrhoids is contraindicated by the results of experience; these bodies probably arise from the constipation which aloes is given to relieve" (Stillé).—"National Dispensatory," p. 159.

‡ "Thérapeutique Contemporaine," quoted in *Journal de Médecine et de Chirurgie*, September, 1881, p. 418.

§ Aloin may be prepared by W. A. Tilden's process, as follows: 1 part of aloes is dissolved in 10 parts of boiling water, acidulated with hydrochloric acid, and allowed to cool. The liquid is then decanted from the resinous matter, evaporated to about 2 parts, and set aside for two weeks for crystals to form, the liquid portion is poured off, the crystals pressed, and the adherent resinous matter separated by shaking with acetic ether, which dissolves the resin.—"U. S. Dispensatory," p. 160, 16th ed.

cases the smallest amount that will cause the bowels to act, it is good practice to continue the medicine for several weeks or months for its curative effect.

There are also several combinations, such as aloin, $\frac{1}{8}$ grain; belladonna, $\frac{1}{8}$ grain; strychnine, $\frac{1}{60}$ grain,—this particular formula is very extensively used,—which are alleged to be superior in their action to aloin alone or uncombined. This very popular and much-vaunted formula is open to the following criticism: First, strychnine, in this amount, limited to a single dose, can have little, if any, effect on the peristaltic action of the bowels. The same is to be said of $\frac{1}{8}$ grain doses of belladonna. Further than this, these granules are not free from danger when taken *ad libitum*, as they practically are. Several cases of poisoning are on record from strychnine pills, or rather granules, and these are capable of causing the same mischief.

I have long since ceased to employ anything but the aloin itself, uncombined with anything else, for the following reasons: In the first place, after careful comparison, I fail to see that the addition of belladonna or strychnine to the aloin increases its purgative effect, the same amount of aloin alone giving equally good results. This I have demonstrated time and again, frequently on the same subject. Certainly there is no good reason for dosing a patient for a long time with powerful drugs like these, if the same results can be obtained without them.

Dyspepsia is sometimes associated with constipation, but not nearly so often as it is alleged to be. In those cases where indigestion is present, nux vomica can be used in the form of the tincture, giving a large or small dose, as the case seems to require. Other remedies appropriate to the case may also be added. In this way the constipation can be treated much more satisfactorily, both to patient and physician, than by attempting to combine all the remedies that may be indicated in one prescription.

THE CORTICAL MOTOR CENTRE OF THE LARYNX.

Dr. J. Garel and Dr. Dor have recently observed a case which is especially interesting as offering an affirmative answer to the question so long the subject of controversy as to the existence of a cortical motor centre for the larynx. The case is reported in full in the *Journal of Laryngology and Rhinology* for May, 1890, being that of a man suffering from ulcerative endocarditis with pericarditis, who, three days before his admission to the hospital, had been suddenly attacked with aphonia. On examination, apart from the cardiac symptoms, pulmonary œdema, etc., there was noted complete paralysis of the left vocal cord. Any other traces of paralysis were absent, and the case was, therefore, one of pure laryngeal paraplegia. The patient died three days later, and at the autopsy there was found in the right hemisphere a small centre of softening, triangular in shape, and occupying the upper internal part of the lenticular nucleus, and extending slightly on to the external part of the internal capsule. The author concluded from the examination of these cases, as well as from the records of numerous experimenters, that—

1. There exists a cortical motor centre for the larynx in each cerebral hemisphere.

2. This centre is located at the foot of the third frontal convolution on the fissure which separates it from the ascending frontal.

3. The fibres originating from this centre pass to the level of the external part of the knee of the internal capsule, forming in the geniculate fasciculus a motor laryngeal fasciculus, independent of the fasciculus for aphasia and the hypoglossal fasciculus.

4. The laryngeal centre has a crossed action. Its destruction determines total paralysis of the vocal cord of the opposite side (cadaveric position).

CUBEBIC ACID IN GONORRHŒA.

Officinal cubebs contain cubebic acid, an ethereal oil called cubebene, and an indifferent body, to which the name of cubebin has been given. Cubebic acid is a whitish substance, resembling wax, which becomes discolored brown when exposed to the air, and is very soluble in alcohol and ether.

According to Bernatzik (*Journal de Médecine de Paris*, June 1, 1890) the antiblennorrhagic action of cubebs is principally due to the presence of cubebic acid. Therefore the administration of cubebic acid alone, according to the author, will produce more reliable results and a more certain cure.

The maximum dose, according to Anrep and Voromikin is 15 grains, while no more than seventy-five grains should be given in twenty-four hours.

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Leading Articles.

THE NARCOTIC ACTION OF CODEINE.

ALTHOUGH codeine was discovered sixty years ago, and its valuable properties have been fairly well recognized in France, where it was discovered, outside of this country but little attention has been paid to its valuable properties. We have recently referred to several papers which point to the value of codeine as a substitute for morphine, and the number of publications which further strengthen this position is rapidly growing. The most recent is an article by Dr. Loewenmeyer, who publishes in the *Deutsche Medicinische Wochenschrift* for May 15, 1890, an article based on the administration of five thousand different doses of this remedy to four hundred different patients in the Jewish hospital of Berlin.

The author starts with the claim that codeine is analogous in chemical composition and activity to morphine, although it possesses a less intense narcotic action, but as a balance to this it is claimed to be absolutely free from unfavorable influences. The author's first class of investigations were based upon the recommendation of Dr. Lauder Brunton as to the value of codeine in various conditions of the abdominal and pelvic organs, accompanied by pain, such as gastralgia, colic, and pain located in the pelvis, without any recognizable anatomical cause, especially in visceral neuralgia. The author states that his success was in almost all cases satisfactory. Patients for hours after its administration were entirely free from pain, and were able to sleep even after the effects of the remedy had passed off. Renewed administration of the remedy, in the same dose as the previous one, likewise succeeded in producing a similar result.

So also in cases where the pain was evidently dependent upon marked anatomical alterations, such as gastric ulcer, cancer of the liver and intestine, or of the diaphragm; here also was the drug in many cases satisfactory, although it was by no means invariable. Of such cases the author refers to notes of at least one hundred, and of these, in ninety to ninety-five per cent., morphine was successful in relieving pain, while codeine only proved absolutely satisfactory in fifty to sixty per cent. of the cases. In attempting to explain the character of the cases in which codeine was without action, it appears that all cases in which the pain is paroxysmal in character and of great intensity, codeine will afford but little relief. It therefore failed in cases of biliary and renal colic and cases in which small doses of morphine had proved perfectly efficacious. Although this might seem to offer but slight recommendation for the use of codeine, it must, nevertheless, be recollected that codeine as claimed by the author is entirely free from any unfavorable action on the organism, and a remedy which is successful in more than half of such cases certainly does not deserve to be overlooked, especially since it must be recollected that such cases are ordinarily liable to numerous relapses, and therefore a prolonged treatment with narcotics is to be expected, and the constant use of morphine, it is hardly necessary to say, is extremely undesirable. And yet it must not be supposed that codeine is indicated in every case of abdominal pain, for the author calls attention to the fact that codeine is unsuitable for numerous cases of acute diffuse inflammation of the peritoneum. For there the indication is to arrest as much as possible the intestinal peristalsis, an action which is not possessed by codeine, which often appears to intensify intestinal

peristalsis. Such cases, therefore, fall within the domain of the action of opium. If, however, the acute symptoms have been overcome, and then, as is so often the case, pain still remains, codeine now assumes the position of the most reliable remedy; such, for example, as in the later stages of perityphlitis. Dr. Loewenmeyer also states that he has employed codeine with considerable success in a large number of cases of pain having their cause in the urino-genitals, ovarian pain being especially amenable to the action of this remedy.

It is in diseases of the thorax and diseases of the respiratory tract, however, in which the author becomes most enthusiastic in recommendation of codeine. In phthisis especially morphine is not to be compared with codeine as capable of removing the stitch in the side, the feeling of pressure in the chest, the dyspnœa, and the distressing painful cough which so frequently accompany these cases. The author adds that since he commenced to employ codeine in such cases morphine has been but rarely administered. So also in other affections of the respiratory tract, such as in pneumonia, bronchial catarrh, and pleurisy, codeine has been employed by the author with success. Pulmonary asthma also has proved amenable to its employment, and it has been found that the majority of these cases may take codeine for months at a time without any unfavorable effect or without any reduction in the intensity of its action. Heart-disease is claimed by the author to be no contraindication to its use, and even in cases of marked fatty heart it may be used with success. In cases of nerve-affection, however, such as organic disease of the brain and spinal cord or neuralgia of peripheral nerves, although codeine may, perhaps, fail to produce any effect upon the pain, it nevertheless has valuable properties, according to the author, as a hypnotic; and, even where insomnia is due to pain, relief may be confidently expected in the majority of cases from the use of codeine.

As regards the doses employed by the author, the single dose varied from ⅓ to ¾ of a grain, there being rarely any necessity for exceeding the latter dose, since the author states that where ¾ of a grain fails to produce relief an increase of the dose will rarely add to the efficacy of the remedy. The remedy was ordinarily given in powdered form in capsules or in solution sweetened with syrup to disguise the unpleasant taste.

Codeine unfortunately, however, costs nearly three times as much as morphine, and nearly three times as large doses are required, so that its use is, therefore, a somewhat costly experiment.

After all, perhaps, the strongest recommendation for codeine, provided its narcotic properties be granted, is that it seems to be free from any liability of establishing the opium habit, and is, in fact, used by Schmidt (*Wiener Medizinische Presse*, 1889, No. 43) in the treatment of morphinism.

Dr. Schmidt claims that when codeine is employed in cases of morphinism, the craving for morphine is rapidly overcome, and that after a very short time the doses of codeine may be rapidly reduced; and that while the treatment is being employed, the symptoms, which would otherwise accompany suppression of the use of morphine, are absent.

Dr. Schmidt has in the majority of cases employed the phosphate of codeine, and in some cases of pronounced morphinism has given as much as forty-five grains of the phosphate of codeine in one day.

Fischer (*Journal de Médecine de Paris*, May 26, 1890) recommends in the strongest terms the use of the phosphate, especially given hypodermically. He employs a solution containing 15 grains of the phosphate of codeine in 320 minims of water, with $\frac{3}{10}$ of a grain of carbolic acid. Of this, about 15 minims may be injected with a hypodermic syringe.

As in the case of so many other drugs, the usefulness of codeine will greatly depend upon its mode of administration, and it should be remembered that codeine, while soluble in alcohol and ether, is almost insoluble in water. The average dose of codeine for an adult should be about ½ grain, and it may be administered either in the form of powder, pills, capsules, or in syrup. If given in the form of powder, it should be recollected that the taste of codeine is almost as bitter as that of morphine, and therefore its administration, in the form of pills, capsules, or syrups, is preferable. The best excipient for codeine, in making it into the pill form, is extract of gentian and powdered licorice-root, fifteen grains of codeine being made into thirty pills. The syrup of codeine is best employed where the codeine is principally designed to relieve cough. Where it is desired that codeine should enter into any watery preparation, the hydrochlorate sulphate or phosphate should be chosen on account of their greater solubility, while the phosphate is best for

subcutaneous application, as it dissolves in 4 parts of water, and so administered rarely produces an irritation. Where so employed, as recommended in the *Journal de Médecine de Paris* for June 15, 1890, a little carbolic acid should be combined with it.

MENTAL OVERWORK IN MODERN LIFE.

DOUBTLESS the age in which we live is peculiar, in the sense that multitudes are obliged to toil harder with their brains than any previous race. Never before, perhaps, in the history of mankind did arduous strife and competition, involving the higher nervous energies, become so necessary. The present generation is the heir to all the acquisitions of the past, but these have been an ever-accumulating burden, which is almost too great for the strong to bear, while the weak and exhausted must succumb beneath the load, though the latter be no more than just sufficient to equip its possessor for a fair chance in the struggle for existence.

It has been said a hundred times, and cannot too much be reiterated, that many of the conditions of our modern life are unfavorable to the best physical and mental development; that a sedentary life stunts and dwarfs the muscular powers, while constant study, without physical exercise, dwarfs and dulls the intellect; that overwork of every kind exhausts the organs and tissues concerned in such overwork; that the fruits of overschooling and intense competitive examinations are seen everywhere in the neurasthenia and premature decay of the present generation.

It has been proved, however, that hard study can be borne with impunity, provided that sufficient physical exercise be taken. This is a truth which the literary man and the student should ever have in mind. We have a good instance of this in the life of the late Frenchman, Littré, one of the most indefatigable literary workers of this age. His habit was to spend most of the day out of doors in physical recreation and in exercise; and he only began his studies and his writing about seven o'clock in the evening, when he would enter his library and pore over his books, absorbed in study, or bend over his writing-desk, working without cessation, till three or four o'clock in the morning, when, yielding to fatigue, he would seek a few hours' refreshing sleep.

It is well known that many of the most noted writers in the medical profession have been men who have diligently kept good their physical powers while performing an enormous amount of brain-work; we need only instance such professional lights as the late Dr. S. D. Gross, Dr. Austin Flint, Sir Thomas Watson.

At this season of the year, to businessmen, students, and professional men, this advice is opportune, and, however trite, needs emphatic repetition. Take suitable vacations. Don't let the muscles become toneless and atrophied from disuse. Seek frequent occasions for breathing mountain air or sea air; leave the city and go to the country. The flagging mental powers are best rallied and quickened by change, recreation, and physical exercise.

Physicians above all others often feel that they cannot afford to go away from home for even a short vacation; but such economy is short-sighted and deplorable.

In a recent spirited publication,* Marie Manacéine, whom we may call the Mary Somerville of Russia, has traced the causes, effects, and remedies of mental overpressure in modern life. She lays great stress on the want of gymnastic training in schools and the numerous unhealthy conditions of our civilization. The besetting infirmities of the age are "cerebral anæmia" and "nervous exhaustion." The causes are complex, but they all act similarly,—"by producing irregularities in the vascular sphere;" *i.e.*, by impairing the tonus of the cerebral blood-vessels. "When once the tone of the blood-vessels is lost, when their nutrition is disturbed, and the circulation no longer responds to the exigencies of normal life, phenomena of dissolution begin to manifest themselves."

To this want of tone a variety of causes conduce,—the quality of the ingesta, excitement, worry, excessive application of mind, etc. Mlle. Manacéine regards the stimulants (tea, coffee, alcohol, tobacco, etc.) in which the people of the age are prone to indulge as being large factors in producing a toneless condition of the cerebral vessels; but exhaustion by overwork, and especially by worry, are doubtless still more important factors.

As remedial agents, besides avoidance of the causes, Mlle. Manacéine assigns great importance to gymnastic and other physical

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* "Le Surmenage Mental dans la Civilisation Moderne." Translated from the Russian. Paris, 1890.

exercises, and to hydrotherapy. Cold douches and bladders of ice to the head have given some excellent results. Should the professional man drink wine, tea, and coffee? it is asked. There is scientific evidence that these beverages (and especially spirits), if taken in any excess, do favor arterial degenerations, or, at least, that cerebral plethora, which finally forces the tonus of the blood-vessels. Hence the proper counsel would be moderation or abstinence. The evils resulting from excess are undisputed. In this age of excitements and unrest there is an importunate demand for stimulants of all kinds, but he is the wisest and happiest man who can live calmly and at ease without them.

THE ALKALINE CACHEXIA; TREATMENT OF PSEUDO-GASTRALGIA DUE TO EXCESSIVE (HYDROCHLORIC) ACIDITY BY LARGE DOSES OF ALKALIES.

TROUSSEAU taught that alkalies, when their medicinal use is long continued, or when they are taken even for a brief period in enormous doses, impede the organic combustions, and produce a peculiar kind of cachexia called by him *the alkaline cachexia.* This doctrine has been confirmed by recent experimenters, as far as excessive doses are concerned, which, undoubtedly, have a "deglobulizing" action on the blood, while diminishing the proportion of urea in the urine and increasing that of uric acid. That, however, moderate doses, no matter how long continued, are pernicious, in the way that Trousseau maintained, has been disputed by Mealtre, Martin Damourette, Harley, and others, who affirm that alkalies are trophic agents, which energize nutrition, increase the figure of blood corpuscles, and augment the proportion of urea excreted. The waste of the organism is increased under their use, but, at the same time, a powerful impulse is given to assimilation; more food is demanded and appropriated; anæmic and cachectic states are really made better. "It is a mistake," says Martin Damourette, "to believe that the alkaline waters are debilitating and contraindicated in anæmia, for they are among the most active agents of reconstruction."

This view seemed to be sanctioned at the late meeting of the Société de Thérapeutique, and most of the participants in the discussion which followed the reading of Huchard's paper affirmed that they were believers in the administration of alkalies in the large doses recommended by that therapeutist.

The title of Huchard's paper was "Pseudo-Gastralgia from Hydrochloric Excess treated by Alkalies in Large Doses." It is known that there is a painful affection of the stomach, often assuming an intermittent gastralgic type, which is caused by excessive secretion of hydrochloric acid; this affection is generally accompanied by dilatation of the stomach. "It is," says Huchard, "dyspepsia by continuous secretion of hydrochloric acid" (*pseudo-gastralgie hyperchlorhydrique*).

The pain is very apt to come on when the stomach is empty, and is relieved by albuminous food, by milk, and by alkalies. Among the symptoms are pyrosis, acid eructations, and attacks of neuralgiform pain, which are generally nocturnal.

Among the remedial measures proposed is the restricting of the patient to an azotized diet and to milk. Debove suggests the dry-diet treatment. The patient should eat five light meals a day and drink little. The hyperacidity is combated by alkalies,—from half an ounce to an ounce of bicarbonate of sodium daily, in divided doses. Charcot gives from one to two ounces, but Huchard considers this dosing as excessive. Some authorities prefer a combination of sodium bicarbonate with prepared chalk, giving doses of 15 grains every hour after meals.

To combat the intestinal atony and constipation so common to this disease, laxatives, as aloes, podophyllin, cascara sagrada, etc., are useful; all aliments of slow digestion and all fermented or distilled liquids are to be avoided, as being calculated to increase the gastric atony and dilatation.

At this meeting M. Labbé stated that the large doses of sodic bicarbonate were as applicable to cases where there was deficiency as to those where there was excess of hydrochloric acid. Dumas and Blondlot long since proved that the effect of the ingestion of bicarbonate of sodium was to promote the secretion of gastric juice, and, in particular, of hydrochloric acid. Trousseau, and later Gubler, made their patients take a glass of Vichy water a quarter of an hour before meals to excite the appetite and provoke an acid secretion.

Evidently, however, there is a great difference between giving alkalies in small doses to stimulate secretion, and in massive doses to neutralize acidity, and to this Huchard referred in his summing up.

This whole subject of hypersecretion of the natural acid of the stomach needs elucidating. The fact of the benefit conferred by the alkaline medication is none the less acknowledged.

PILOCARPINE IN CHRONIC ARTICULAR RHEUMATISM.

THE therapeutics of rheumatics is bounded by narrow lines; for while in acute rheumatism in salicylate of sodium, antipyrin, salol, and phenacetin we have remedies any one of which is in many cases worthy of commendation, and enables us to treat the disease quite as satisfactorily as is the case in malaria or syphilis, in the chronic form but little may be expected from them.

Massage, from which, upon its first introduction, so much was expected, has likewise not yielded the promised results, since in the treatment of chronic rheumatism we have to deal not with the removal of a serous exudation, but with the treatment of connective-tissue contraction and hypertrophy, while more severe mechanical measures are contraindicated by the fact that irritation of the joints may result in inflammation and renewed suffering. Besides, it should be remembered that the muscles, which are the seat of contracture in this affection, rather tend to tear than to stretch on forcible extension, and attempts in this direction may, therefore, result in an entirely useless joint. The indications thus are, as a rule, incapable of fulfilment, though a paper by Dr. Hochhalt, in the *Internationale Klinische Rundschau* for June 8, 1890, calls attention to a measure which he claims to be of the utmost value in the treatment of such cases.

About ten years ago, Dr. Colman Korda called attention to the use of pilocarpine in cases of chronic articular rheumatism, but his statements appear to have attracted no attention, and we have met with no publication on the subject until Dr. Hochhalt published the results of his experience. Pilocarpine, as is well known, produces great increase in the secretion of the salivary and sweat glands, and leads to such increase in tissue-change that organized exudation products of inflammation are dissolved, and results of retrograde tissue metamorphosis are eliminated. As an illustration of the truth of these statements, it is only necessary to recall the value of pilocarpine in ophthalmological practice, as in cases of opacity of the vitreous humor, or in iritis or irido-choroiditis, where it is especially serviceable in removing the products of inflammation. In diseases of the internal ear and in severe types of syphilis, and in dropsy of renal origin, it has recently been recommended by Von Ziemssen and Senator.

Dr. Hochhalt describes a case of chronic articular rheumatism, which seems to show that the use of pilocarpine is capable, to a certain extent, of relieving the less intense form of connective-tissue contraction, and to a certain extent of restoring the use of an affected joint. Of course, where the joints are bound down by old contractured muscles, or where the bone itself has become affected, but little may be expected, though the very fact that in certain cases relief may follow the use of pilocarpine is to be regarded as an important addition to our therapeutic measures.

THE PREVENTION OF THE TOXIC EFFECTS OF COCAINE.

THE great disadvantage attending the use of cocaine is that it sometimes, when least expected, produces serious or annoying toxic effects. It is a striking fact, however, that the local use of cocaine in the eye seems to be most free from these results, while its application to the ear, nose, and throat is often followed by alarming results. In the *New York Medical Record* for June 21, 1890, Dr. Isidor Gluck writes that the combination of cocaine with phenol does away with these risks without interfering with the anæsthetic properties of the cocaine. Dr. Gluck dissolves two drops of phenol in one drachm of distilled water, shaking until solution is perfect, and then adds ten grains of cocaine hydrochlorate.

The author states that he has been using this formula for over a year, and has since then, as yet, met with no instance where cocaine produced any toxic effect. He has been able to use it in any quantity, and in any part of the nose or throat, without the least fear of harmful consequences. Phenol, in the same manner as cocaine, by suspending the functions of the sensory nerves, is itself a local anæsthetic of no mean power, while the combined action intensifies the anæsthesia. Phenol also coagulates albumen, and combines with fats, forming a very superficial eschar, which prevents the rapid absorption of cocaine, and hence its toxic effect. Phenol is also destructive of bacteria, fungi,

etc., and prevents decomposition in the solution.

In conclusion, as results of this combination, Gluck claims the following advantages:

Toxic effects are prevented; the anæsthetic action is increased; it prevents congestive reaction and decomposition of the solution, and renders the solution aseptic.

The same principle has been also employed by Hummer, in Geneva, who has likewise recognized the fact that one of the chief dangers in the administration of cocaine is its extremely rapid absorption. He has recommended as a preliminary measure when local anæsthesia is to be produced for an operation by injection of cocaine, to first apply Esmarch's bandage, the anæmia so produced greatly retarding the rapidity of absorption, and hence the risk of toxic symptoms. Occasionally it will be found that symptoms of poisoning, after the administration of cocaine for this purpose, do not appear until some time after the operation. Hummer likewise explains this fact as attributable to the bloodless character of the operation, for, if bleeding is entirely prevented, there is no escape of the solution from the tissues; so that, therefore, after the operation has been completed, bleeding should be encouraged.

Reports on Therapeutic Progress.

DIAGNOSIS AND TREATMENT OF METRORRHAGIA.

At the meeting of the British Gynæcological Society, held May 28, 1890, Dr. Edis read a paper on the "Diagnosis and Treatment of Metrorrhagia" as an introduction to a discussion upon the subject (*Medical Press and Circular*, June 4, 1890). Alluding to the fact that the uterus was the only organ in the body from which blood flows as a physiological process, he showed how this function was influenced by many and various conditions, both general and local. A correct diagnosis as to the cause of any undue loss was the first and most important element of successful treatment. This could often be arrived at on the principle of diagnosis by exclusion, not forgetting the influence of diseases of the heart, liver, or kidneys. Some of the most difficult cases to deal with were the terminal floodings about the climateric period. The most frequent local causes were enumerated, and cases illustrating these were given. Where ordinary remedies failed, the importance of exploring the interior of the uterus was insisted upon. Removal of the ovaries in very intractable cases might be requisite. The reliable remedies for checking uterine hemorrhage were mentioned, ergot being one of the most potent. Hydrastis in cases of myoma was often of great service. Iron in suitable cases was of much value, but needed discrimination. The ordinary astringents, such as gallic or sulphuric acid, had really very little influence in restraining hemorrhage. Quinine and strychnine would often succeed in restraining hemorrhage where the system was much depressed from repeated or prolonged losses. Bromide of potassium in cases of ovarian irritation was very useful. Cases illustrating the difficulties of diagnosis and the methods of treatment were given.

Dr. Fancourt Barnes said that in the large majority of the cases of metrorrhagia,—*i.e.*, cases where bleeding was going on continuously,—the hemorrhage was due to retained products of conception. He recently had two cases in one ward at the Chelsea Hospital for Women. One was that of a woman, aged 40, who had been losing for nine or ten months continuously. She was very anæmic, and was altogether in a very unsatisfactory condition. The cervix was dilated by laminaria tents, and he curetted the uterus by means of the finger, a method which he always preferred when possible. He removed a large mass of placental tissue, and the hemorrhage ceased, the patient making an uninterrupted recovery. There was another patient in the same ward with practically the same history: she had been losing blood for eighteen months; her age was 30. He dilated the cervix in the usual way and curetted as above. For two weeks she was much better, but then the hemorrhage recurred so that he was obliged to curette a second time, on that occasion using the blunt curette as well. She was again relieved, and he thought he had removed all the placental tissue remaining in the uterus. He was, however, deceived, for the hemorrhage recurred after a few weeks, and she was so bad that in his absence Dr. Edis had kindly seen the case, and had removed what he considered to be the remainder of the placenta. He, too, however, was deceived. She had no more hemorrhage to speak of for some time, but she developed symptoms of septicæmia, to which she succumbed.

Post mortem.—They found another mass of placental tissue still remaining in the uterus. These two cases were extremely interesting, as showing that, like all operations, such a case might be easy or difficult. In reply to the President, he added that it was his invariable practice to wash out the uterus with a solution of iodine at the end of the operation, and to apply iodine to the interior of the cavity for a fortnight or so afterwards.

Dr. Mansell Moullin observed that though there was nothing very novel in the paper, the subject was one of such extreme importance that it was well for it to come under their consideration from time to time. He mentioned that he had met with several cases of hemorrhage in elderly women from 50 to 55, in whom the menopause ought to have taken place some years previously, and in whom periodical hemorrhage had been so profuse as to reduce them to an extreme state of anæmia and debility. In these cases the resemblance to malignant disease was very great. The uterus was usually in a condition of subinvolution, retroverted, and partially prolapsed. This probably kept up the congestion of the organ, preventing the atrophy which ought naturally to take place. The mucous membrane in these cases was probably in a large measure replaced by unhealthy granulation tissues. Another class of disease was where the symptoms were associated with the first appearance of the catamenia, which was sometimes attended by hemorrhage so profuse as even to cause death, though he had never seen such a case. If the symptoms were persistent and of an alarming nature they would have to be guided by the same rules as in other cases,—that is, anæsthesia, examination of the uterus, followed by suitable applications to the interior.

Dr. Hugh Fenton said the paper was a very fitting rider to that contributed by Dr. Lycett, and read at a previous meeting. This question of the diagnosis and treatment of metrorrhagia was a branch of gynæcology which was continually cropping up. He feared that it was often made a matter of treatment and not diagnosis in these cases of metrorrhagia, where everything depended on a full and complete examination not only per vaginam, but of all organs of the body. Some of the cases related by Dr. Edis showed how frequently perfectly preventable hemorrhage was allowed to go on for want of a proper examination in the first instance. He called attention to the cases of villous endometritis, where there was nothing to show for the hemorrhage. He asked Dr. Parsons whether he had treated any of these cases by electricity, and, if so, with what result? He mentioned two cases in which he had removed the ovaries for hemorrhage, which had resisted all other treatment, with complete and permanent success.

Dr. Heywood Smith said that, apart from the cases of malignant disease and fibroids, there were no cases of hemorrhage of which one saw more than those due to retained products of conception. He observed that all cases did not require to be widely dilated by tents in order to effect a cure, and he had found the application of the solid nitrate of silver to the entire surface of the uterus very beneficial. He said that the oviduct was often long and convoluted in these cases.

Dr. Fancourt Barnes said it was sometimes very difficult to differentiate between a piece of placenta which had become almost a part of the uterine wall and the uterine wall proper.

Dr. Robert Barnes recalled a fact which not seldom occurred in women of that age,—viz, profuse epistaxis. That pointed to a constitutional cause, heart-disease, or some disturbance of the circulation, symptoms which were relieved by the hemorrhage, uterine or otherwise. The term vicarious menstruation, which was applied to these cases, was not altogether appropriate, but it showed clearly that they must look beyond the pelvic organs in order to unravel the mystery of some of these cases. If they took the other extreme of life,—the commencement of ovarian life,—they sometimes met with the most tremendous hemorrhages. He had seen one or two cases that had terminated fatally. He remembered a case at Brighton some years ago in which the patient had a very narrow escape. Of course when one meets with these cases in young women, one's first thought was to suspect pregnancy, but in this case he was enabled to say that it was not so. He had succeeded in arresting the hemorrhage by local measures. The great thing was to get a diversion of the blood from the uterus, whence it escaped. In one case only transfusion had saved the patient. The cases which were independent of local uterine or ovarian disease were also of extreme importance. They knew that taking away the ovaries in cases of hemorrhage due to fibroids would sometimes stop not only the hemorrhage but the growth of the tumor. He had seen cases of that kind, and it must be looked upon as a last resource in these

cases. He maintained that gynæcologists were far less open to the reproach of not looking beyond the pelvic organs than were surgeons to the charge of neglecting these primary organs which were the ruling power in women.

Dr Inglis Parsons said he had had two patients supposed to be suffering from a malignant disease sent to him for the electrical treatment. In both cases hot water douches had diminished the hemorrhage. In answer to Dr. Fenton, he said he had not had the questionable advantage of making a post-mortem examination after using the constant current, though this had occurred in one case after the faradic current. He mentioned three cases treated by the constant current in which permanent relief had been recorded. He said that he had a good many cases of fibroids treated by electricity under observation which he should one day publish. He quoted one case sent to him by Dr. Edis in which he had made some thirty applications. It had the effect of relieving the hemorrhage, and she was practically free for two years, but recently she had had one profuse attack. He mentioned a case sent to him by Dr. Fenton of a patient, aged 43, who had a well-marked fibroid and profuse hemorrhage. In that case the current kept the hemorrhage in check, provided it was used about once a week, but not otherwise.

Dr. Bantock observed that in the cases of menorrhagia in very young subjects it was impossible to find any appreciable local disease, and they were restricted to constitutional treatment. Constipation very frequently coincided, and saline chalybeate aperients, followed by iron and ergot, usually brought about the desired result. There were, however, cases in which this treatment was of no use, and the patient might even die. Some years ago there was a case of this kind at the Dorset House branch of the Samaritan Hospital. One condition to which Dr. Edis had given great prominence was that of menorrhagia and metrorrhagia, due to retained placenta. He observed that when a portion of the placenta had been actually protruding from the os, that part of it was decomposed, while the upper part, particularly that near the adhesion to the uterine wall, was often perfectly free from decomposition. He agreed that the best curette was the nail of the index finger, but he could not agree that the blunt curette was preferable to the sharp curette, the spoon curette being that which he preferred. He did not think there was a more useless instrument than the ovum forceps, for the portion grasped was sure to tear away. He insisted upon the beneficial effect of the tincture of the muriate of iron when symptoms of pyæmia declared themselves, given in doses of from 10 to 15 minims every two or three hours. He observed that large doses of ergot might increase the hemorrhage when 10-minim doses would diminish it. With regard to the administration of bromide of potassium, he said that he had tried it years ago, but had quite given it up since it seemed to conduce to, rather than check, the hemorrhage.

Dr. Edis, in reference to Dr. Fancourt Barnes's case upon which he had operated, mentioned that the patient was very ill at the time, her temperature when placed on the operating-table being over 104° F. The "mass" of placental tissue described as having been found post mortem was only about the size of a filbert and stuck up in one cornua, and even post mortem was by no means easy to identify. He defended the use of the ovum forceps. He said they were useful in certain cases. When he spoke of not giving ergot he alluded to cases in which there was reason to believe that something had been retained in the uterus, and to that general rule he adhered.

THE ANTITHERMIC PROPERTIES OF HYDROCHINONE.

In 1877 Brieger first called attention to the antithermic properties of hydrochinone, but it was not until 1883 that this substance, from the work of Seifert and Steffen, acquired a certain amount of repute as an antipyretic; later, in 1886, Silvestrini and Picchini published a number of observations of their experience with this drug, both clinically and experimentally, which, while establishing the fact of the antithermic properties of hydrochinone, were not sufficiently extensive to explain the mode of action of this remedy. The subject has again been taken up by Dr. Gaetano Traversa, whose results are published in *La France Médicale* for May 16, 1890.

His experiments were undertaken with the object of determining whether the remedy was capable of lowering both physiological and febrile temperature, and to establish the degree and duration of the antithermic effect of different doses, as well as the phenomena which accompany or follow the thermic de-

pression. Through his studies he has arrived at the following conclusions:

1. Hydrochinone has an influence both on physiological and pathological temperature, although in healthy individuals the lowering of temperature is much less marked than that which follows the administration of the same dose to fever patients.

2, *a*. In patients with fever a dose of 3 grains produces only a maximum reduction in temperature of about .7° C.

b. In doses of 5 grains there occurs a reduction of temperature of .85° C.

c. Doses of 6 to 8 grains produce a depression of 1.48° C.

d. Doses of 9 to 11 grains produce a thermic depression of 1½° to 3°.

e. These doses are well tolerated, and produce no gastric disturbance or nervous phenomena.

f. The reduction of temperature results from thirty to forty minutes after the administration of the remedy, and reaches its maximum from one hour to one hour and a half afterwards.

g. The antipyretic action is not ordinarily accompanied by any disagreeable symptoms, though sometimes doses of 6 to 11 grains, frequently repeated, are followed by abundant sweatings, chills, and when the antipyretic effect passes off the temperature rapidly increases.

h. The blood-pressure does not appear to be sensibly modified unless the doses are extremely large and frequently repeated, when the reduction of temperature is accompanied by a slowing of the pulse, especially in febrile cases, and the blood-pressure is considerably reduced.

3. In a healthy man, with doses of 6 to 15 grains, given at once, the depression of temperature does not amount to more than .8° C.

4. Animals do not support the influence of hydrochinone as well as man. In rabbits the rectal temperature, even with doses of ¾ to 4 grains, is diminished a degree or more; with doses which are not fatal, but which are yet capable of producing convulsions, the temperature increases, and may amount to 38.4° C. In dogs, with doses of ½ grain to 1 grain for every two pounds of body-weight, the temperature falls from $\frac{1}{10}$° to ½°; but, on the other hand, with fatal doses, amounting to 2 grains for every two pounds of body-weight, symptoms of collapse appear and constitute the characteristic symptoms of the poisonous action of this substance, and the temperature, which had been already depressed, maybe one or two degrees, still continues to descend, until death results.

5. It is well to note that hydrochinone, though tolerated in large doses, does not give constant effects. The action frequently varies greatly in the same individual at different times with the same amount. The author's conclusions as to the mechanism of this drug are as follows:

1. Hydrochinone in small doses greatly increases the dissipation of heat, and, as a consequence, both in febrile patients and in healthy individuals, the peripheral temperature may be increased from ½° to 2°, while the central temperature is depressed.

2. This dispersion of heat is in great part due to the quantity of blood contained in the peripheral vessels as a consequence of vascular dilatation.

3. In a healthy man and in febrile cases the vascular dilatation precedes by about ten to fifteen minutes the reduction of the axillary temperature.

4. The vaso-dilatation does not depend upon the action of the vaso-motor centres, but is due to a modification of the peripheral centres in the vascular walls. The chills, which are observed on the subsequent ascension of the temperature, and the rapidity with which the vascular dilatation disappears, are proof of this fact.

5. As regards the mechanism of the antipyrexia, in addition to an increase in heat dissipation, the author states that there is likewise a diminution in heat production. This fact explains the reduction of rectal temperature which is produced by hydrochinone in rabbits in whom the external dissipation of heat has been prevented.

6. As to the manner in which the excretion of urea is affected, of sulphuric acid, phosphoric acid, and sodium chloride in the urine of animals subjected to the influence of hydrochinone, these principles, especially after the administration of moderate sized doses, are diminished in amount.

From these results the author concludes that hydrochinone reduces the temperature both by dissipation of heat and by preventing the production of heat. Thus hydrochinone diminishes heat production by retarding the chemical processes and oxidation which occur in the organism.

The author seems inclined to experiment with hydrochinone in typhoid fever not only on account of its antipyretic properties, but also because it possesses considerable power in arresting fermentations of various kinds.

THE TREATMENT OF EPILEPSY WITH BIBORATE OF SODIUM.

A paper published by MESSRS. J. S. RISIEN RUSSELL and JAMES TAYLOR in the *Lancet* for May 17, 1890, emphasizes a fact which seems to be little known,—namely, the value of the biborate of sodium in the treatment of epilepsy, while at the same time they call attention to some of the ill effects which may result from its use. The literature on this subject is very scanty. Fulsom, in an article to the *Boston Medical and Surgical Journal* for 1886, page 147, says that the effect of borax in cases where bromide was not well borne, or had been taken for a long time without effect, was very satisfactory; and he quotes the details of two patients, in both of whom severe symptoms of bromism made it impossible to continue this form of treatment. Fits became frequent and severe when the bromide treatment was discontinued; accordingly, the administration of borax was commenced, at first in 10- and later in 20-grain doses three times a day. In one of these cases seventy eight days were allowed to elapse before the new treatment was commenced, and it was continued for two years; during the last twelve months only two fits had occurred, caused on each occasion by "indigestion." The other patient had only two fits in eighteen months. Both patients became all right mentally, and were in perfect health; in both a scaly eruption appeared, but disappeared when arsenic was administered; and one patient was troubled by vomiting at the commencement of the treatment, but this ceased when aromatics were combined with the borax.

Gowers, in the second volume of his "Manual on Diseases of the Nervous System," says that he has found borax useful in some cases of inveterate epilepsy, in which bromide had no influence; but that the influence of borax is not comparable to that of bromide in cases in which this is effective. He states that the administration of the drug may be continued for years, in doses of 15 to 30 grains given three times a day after meals, without any ill effects beyond a possible eruption of psoriasis, amenable to arsenic. The drug has also been tried at Ward's Island Lunatic Asylum, where ten patients were selected who had been on bromide treatment for several months, with frequent convulsions. The dose given was 10 grains three times a day for the first nine days, and it was then increased to 15 grains; but no marked improvement occurred in any of the cases at the end of thirty-four days.

Féré and Lamy, in a paper in the *Nouvelle Iconographie de la Salpétrière* for November and December, 1889, quote two cases in which an eczematous eruption had been provoked by borax. The patients were epileptics, who were taking 30 and 45 grains respectively three times a day, and the eruption only faded when the drug was discontinued. These observers considered the eruption an ordinary eczema provoked by borax in persons who were predisposed, as both of the patients had seborrhœa of the scalp, and one had, in addition, a few patches of old eczema, and they are inclined to look upon the stomach disorder as probably accountable for the skin eruption.

The following is a tabular statement of the cases treated by the authors:

Twenty Cases of Epilepsy treated by Biborate of Sodium.

No.	Name.	Age.	Duration of epilepsy.	Maximum dose given.	Duration of treatment.	Frequency of fits before.	Frequency of fits after.	Complications.
1	A. B.	16 years.	4 years.	40 grains.	16 days.	Several daily.	The same.	Nausea.
2	C. D.	32 years.	3½ years.	40 grains.	3 weeks.	2 months.	None.	Vomiting.
3	B. A.	4 years.	6 months.	7 grains.	2½ months.	12 daily.	None.	Sore lips and ears; rhinitis; psoriasis.
4	D. C.	18 years.	1 year.	20 grains.	1 month.	3 weeks.	1 month.	
5	E. F.	20 years.	3 years.	30 grains.	2½ months.	3 days.	None for 1½ months	None.
6	G. E.	26 years.	18 years.	35 grains.	3½ months.	Weekly.	2 months.	Cutaneous eruption; vomiting.
7	F. H.	15 years.	14 years.	30 grains.	9 weeks.	3 or 4 a week.	2 fits.	Sore lips.
8	H. G.	25 years.	12 years.	40 grains.	3 weeks.	Twice a week.	1 fit.	Pleurisy.
9	J. H.	19 years.	10 years.	60 grains.	6 weeks.	Nightly.	1 or 2 a week.	Sore lips; cutaneous eruption.
10	L. M.	15 years.	3 years.	30 grains.	2 months.	Weekly.	None.	Sore lips; vomiting.
11	J. L.	26 years.	10 years.	40 grains.	6 weeks.	3 days.	2 to 12 days.	None.
12	H. M.	10 years.	7 years.	50 grains.	4 months.	3 or 4 daily.	None for 3 months.	Sore lips and tongue; vomiting, with abdominal pain.
13	J. G.	14 years.	2 years.	40 grains.	7 weeks.	Weekly.	3 weeks.	Eczematous patch at angle of mouth.
14	G. N.	20 years.	4 years.	50 grains.	7 weeks.	Varying.	None.	None.
15	M. H.	11 years.	1 year.	60 grains.	2½ months.	Several daily.	4 to 5 weeks.	Sore lips.
16	G. P.	22 years.	3 years.	20 grains.	3 weeks.	Twice a week.	1 fit.	None.
17	J. O.	15 years.	11 years.	30 grains.	2½ months.	1 to 9 days.	1 month.	Sore lips; nausea.
18	F. R.	21 years.	12 years.	40 grains.	2½ months.	1 or 2 daily.	9 days.	Cutaneous rash; nausea.
19	R. T.	14 years.	6 months.	20 grains.	6 weeks.	Weekly.	3 weeks.	Abdominal pain; vomiting; relaxed motions.
20	G. S.	15 years.	10 years.	20 grains.	7 weeks.	1 to 2 weeks.	6 weeks.	None.

Case 14 was that of a young man whose fits were only controlled by such large doses of bromide as produced severe symptoms of bromism. As smaller doses failed to influence the fits, biborate of sodium was given, and the patient continued to take the drug up to the time he left the hospital, seven weeks later, without any ill effect and without having any fits.

Case 7 is that of a boy who presented distinct evidence of congenital syphilis, and was accordingly put upon antisyphilitic treatment for a time; but as the fits did not diminish in frequency or severity, this method of treatment was abandoned, and the administration of biborate of sodium in gradually increasing doses commenced. The result was most marked, as in a day or two he ceased to have fits and had no more, with the exception of two very slight ones, up to the time he was discharged nine weeks later.

Case 12 shows very strikingly the effect of the drug in a boy aged 10 years, who had been subject to fits for seven years, and who, during the last five years, had been having three or four slight fits daily. The interval between the attacks became gradually lengthened until six weeks after the treatment was commenced. He had no more fits from that time until he left the hospital three months later. After he had been taking the medicine for a month, the dose being then 120 grains per diem, it had to be discontinued for a few days owing to sore lips and tongue, together with slight vomiting and abdominal pain. It is a remarkable fact, though one not unfrequently observed in this connection, that the authors were able to resume the administration of the drug in even larger doses without again producing any vomiting or abdominal discomfort.

In Case 2, although the patient, a young woman, aged 32 years, had no fits during the two months she was under observation, yet the writers do not feel justified in drawing any conclusions from this, as the usual interval between the fits had been two months.

Case 20 is that of a girl who had been subject to attacks of *petit mal* for ten years. Various remedies had been previously tried, but none altered the frequency of the attacks, whereas she has been free from fits for six weeks under treatment by the biborate.

Case 17 shows the effect of biborate of sodium where bromide of potassium produced little or no effect.

In the first cases the authors commenced with 30 grains in the twenty-four hours, and pushed it up, as soon as possible, to 180 grains; but they found that nothing was gained by giving such large doses, as they had, in consequence, to suspend the medicine very frequently, owing to gastro-intestinal disturbance, and thus lost time. Therefore, in the later cases, they were contented with 30 grains as the maximum dose, given three times a day after meals. Though this drug undoubtedly possesses the power of controlling the frequency of fits in many cases, and oftentimes does so when bromide has failed or cannot be given in sufficiently large doses without producing great depression, yet its administration is attended with certain unpleasant symptoms, to which brief allusion should be made. The most constant of these is an affection of the lips, which in its most typical and fully developed form results in swelling, chiefly of the lower lip, upon which small vesicles make their appearance and then become larger by coalescence; the contents then become opaque and milky, some of the vesicles burst, while others dry up, and the result is a scaly, chapped condition of the lips, resembling that commonly seen in cold weather. Other cases develop the chapped condition without the previous formation of vesicles. In two of the cases the tongue became sore and denuded of its epithelium at one or two points.

Two of the cases had slight eczematous patches on the skin close to the angles of the mouth, in addition to sore lips, and one of them (Case 3), a little girl, aged 4 years, who was taking 20 grains in the twenty-four hours, had, in addition, an inflammatory condition of the mucous membrane of the nose with slight purulent discharge, and psoriasis guttata scattered over the trunk and extremities.

Case 9 developed a curious erythematous condition of the hands. The fingers, backs, and palms of the hands and lower fourth of forearm were of a bright-red hue, and looked slightly swollen. The redness disappeared on pressure, and there was no evidence of pitting. The parts affected gradually became more dusky, so that in a few days they were almost purple in color, and about this time a few bright-red patches, looking almost like extravasations, but disappearing on pressure, made their appearance on his face. The tongue also became very red, sore, and denuded of its epithelium in several places.

Case 6 developed an eruption of small

punctiform papules, resembling the condition seen in sudamina more than anything else. The eruption was scarcely perceptible at times, while at other times it would be well marked, intensely irritating, and accompanied by redness of the skin, which looked a little swollen, and was sweating. The parts chiefly affected were the palms of the hands and soles of the feet; but patches were also seen in parts exposed to friction, such as waist, neck, axilla, etc. After the condition had existed for a week or more, very slight desquamation was observed on the palms and soles.

Case 18 developed an abundant crop of small papules all over the face, more especially on the forehead, below the eyes, and along the naso-labial folds, after he had been taking this drug about ten weeks. Associated with the papules was a reddish-coppery, patechial-like eruption, which did not disappear on pressure. No discomfort complained of. A week later the above had almost completely faded, when the patient had a severe fit, after which there was an exactly similar condition to that above described. Borax had been suspended when the first rash appeared, and the patient was then taking arsenic and salicin.

Nausea, and in some cases vomiting, necessitated the temporary suspension of the drug; but, as before stated, often the drug could be resumed without again causing any such symptom. In one case the vomiting was attended with abdominal pain, and in two there was diarrhœa. These patients were taking 120 grains in the twenty-four hours at the time when these symptoms showed themselves.

A considerable number of the patients became somewhat emaciated, and pulled down physically after they had been on this treatment for any length of time, but in no case was there ever any sign of mental depression. One patient, who was also taking cod-liver oil at the same time, put on flesh in spite of being on the borax treatment for nine weeks, which suggests that this would be probably a judicious combination in all cases.

Case 8, a young woman, aged 25 years, was attacked with pleurisy while taking the drug. The symptoms were pain, short, hacking cough, and rise of temperature; and a well-marked friction rub could be heard on auscultation. At no time was there any evidence of effusion, though there were several relapses after the first manifestation of the disease. The patient had never had a similar attack before, and as no history could be obtained of any of the usual causes of pleurisy, it might be suggested that the affection of this serous membrane was similar to that which we had seen in skin and mucous membranes, and depended on the biborate of sodium.

As regards the treatment of complications, there is little to be said, as all that is necessary, as a rule, is to suspend the administration of the drug for a time. In cases where vomiting is a repeated symptom, small doses of cocaine, given half an hour before the borax, will be found to obviate this.

In conclusion, the authors do not wish in any way to compare borax to bromide in the treatment of epilepsy, but consider it well worthy of a trial, especially in those cases where bromide has failed or is badly borne.

THE TREATMENT OF ACUTE GONORRHŒA.

In the *Archiv für Dermatologie und Syphilis* appears a paper by DR. FRIEDHEIM, containing an elaborate account of a large number of experiments made in the clinic of Professor Neisser, of Breslau, with the view of determining the best method of treatment in acute gonorrhœa. The object aimed at was to find the local application which possessed in the highest degree the power (1) of killing the gonococci, (2) of influencing the inflammatory phenomena, (3) of promoting epithelial desquamation, and thereby securing mechanical elimination of the micro-organisms. Among the numerous drugs experimented with were various preparations of mercury, including the perchloride and salicylate, permanganate of potash, iodoform, boric acid, pyrogallic acid, resorcin, antipyrin, thallin, and many others. But of all those now tried, the best results, as tested by the microscope, were obtained from a solution of nitrate of silver, of a strength varying from 1 in 4000 to 1 in 2000. The treatment is begun by the injection of this solution in the ordinary way, from four to six times a day, the result being that at first the discharge becomes more abundant, thicker, and more purulent; but in about four days the secretion diminishes, becomes thin, and contains a quantity of epithelium. The gonococci also diminish in a remarkable manner, and after a few days disappear altogether. When this has taken place, the number of injections of nitrate of silver is reduced to two and afterwards to one daily; and other injections, such as boric acid or some preparation of zinc, are used as well. But, in spite of the

almost total disappearance of the discharge, the one daily injection of the nitrate of silver is to be kept up for many weeks. In cases where the nitrate of silver could not be borne, even in weaker solutions than those above mentioned, salicylate of mercury, or thallin, or the chloroborate of sodium was substituted with a certain amount of success; and in the very rare cases in which no antibacterial injection could be tolerated, internal remedies were resorted to. Of these, cubebs, turpentine, oil of gaultheria, oil of sandal-wood, kava-kava, ichthyol, creolin, and copaiba were tried; but among these, copaiba alone, and that only in some cases, was found to have any decided effect on the gonococci. As regards the danger of complications from the use of the nitrate of silver injections, it was found that this mode of treatment was really the best preventive. Thus, among twelve hundred cases of gonorrhœa treated in various ways, there were one hundred and sixty four of epididymitis, but in one hundred and forty-two of these the epididymitis was present when the patient first came under treatment; while of the remaining twenty-two cases, only one was being treated with nitrate of silver. The total number of cases given in the table which is appended to Dr. Friedheim's paper as having been treated by nitrate of silver injections is three hundred and eighteen, and in two hundred and thirty-seven of these it is stated that the antibacterial action of the drug was proved. —*British Medical Journal*, May 24, 1890.

CROTON OIL.

In the new part of the "Arbeiten des Pharmakologisches Institutes zu Dorpat" (p. 5), PROFESSOR KOBERT returns to the subject of croton oil, taking as the basis of his memoir the thesis published three years ago by Herr Hirschheydt, which has been extended so as to include a number of fresh experiments. Herr Hirschheydt's thesis, it will be remembered (*Pharm. Journ.* (3), xvii. 881), dealt, among other things, with the experiments reported in three papers read by Mr. H. Senier before the Pharmaceutical Society (*Pharm. Journ.* (3), viii. 705; xiv. 446), from which it appeared that under certain conditions croton oil was separated by alcohol into two portions, the solution containing the vesicating principle, which was an acid closely allied to oleic acid, and the insoluble portion the purgative principle. An opinion was expressed by Herr Hirschheydt that two kinds of active principles could not be so separated, since the purgative and the vesicating action alike are due to crotonoleic acid, which may occur in the oil both in the free state and as a glyceride. Professor Kobert appears still to hold this view. In the present paper the opinion is expressed that a definite relation of solubility between croton oil and alcohol cannot be established, since it varies with the age of the oil, oils occurring, in fact, which are soluble in alcohol in any proportion, an experience which so far is not necessarily opposed to that of Mr. Senier. By treatment with successive quantities of alcohol, fresh quantities of oil are said to pass into solution; the portions also show different degrees of solubility, the acrid-tasting and vesication portion being the most soluble. It is thought that the varying solubility of the oil may depend upon the fact that the crotonoleic glyceride no longer exists in old samples of the oil, but only the free acid. From a large number of pharmacological experiments it was concluded that a neutral croton oil is essentially milder in its action than an acid oil, such as is officinal in the P. G. Experiments with the free crotonoleic acid did not give favorable results, as doses less than .01 gramme were uncertain in their action, while larger doses caused a very disagreeable burning sensation in the intestines. Professor Kobert therefore recommends, if croton oil be retained in the Pharmacopœia, that only the neutral crotonglyceride should be used, which can be kept unaltered if protected from light. In conclusion, it may be remarked that no chemical examination appears to have been made by Mr. Senier of the insoluble "purgative" portion separated by him, though it would be interesting to know whether the portion of croton oil remaining undissolved by spirit under the conditions mentioned by him consisted wholly or in part of the neutral crotonoleic glyceride, which might also to some extent be carried into alcoholic solution by free acid present in the oil, and so appear as a constituent of both the soluble and the insoluble portion.—*Pharmaceutical Journal and Transactions*, May 31, 1890.

THE PROPERTIES OF FLUORIDE OF SODIUM.

In the *Deutsche Medicinische Wochenschrift* for May 29, 1890, DR. O. HEWELKE publishes an article on the antifermentative and antiparasitic action of fluoride of sodium, and as to the results of its continued employment,

In comparing Dr. Hewelke's results with the statements of other authors, we find considerable discrepancy, in the first place, as to the minor chemical characteristics of the salt employed. Thus, Professor Thumas, who some time ago published an article on this salt, stated that the preparation which he employed was perfectly neutral. Schulz, in another article published in *Arch. f. Exp. Pathol. u. Pharmak.*, 25, iii., iv., experimented with a preparation which had a slightly acid reaction, while Dr. Hewelke states that his preparation, which he claims to have been chemically pure, was strongly alkaline.

It is evident that this difference in the character of the preparations used cannot be without influence on the results, as its occurrence in a pure preparation would be impossible if the salt is one of constant composition. Without doubt, where an acid reaction exists, we must admit the presence of an excess of hydrofluoric acid, since Rabuteau, in his essay on the fluorides, attributes a strongly alkaline reaction to the salt under discussion. Where a neutral reaction is present, we may also admit that an excess of hydrofluoric acid is present, just in enough quantity, however, to be neutralized by the alkalinity of the sodium fluoride. It would, therefore, seem that Hewelke's results are more reliable, since in his experiments the results are to be attributed to the action of the salt, and not to the hydrofluoric acid.

Dr. Hewelke found that the yeast plant was prevented from growth in the presence of solutions of 1 to 100 or 1 to 300 of this salt; in 1 to 600 and 1 to 3000 there was a marked interference with fermentation. The author found, further, that while urine unmixed with any antiseptic would undergo alkaline fermentation within three to five days, in the presence of 1 to 2000 solution of sodium fluoride the acid reaction persisted from fourteen to fifteen days; in solutions of 1 to 600, it remained twenty days; in 1 to 100, over a month. The decomposition of urea was similarly delayed. Solutions of 1 to 80 to 1 to 160 parts of water, prevented decomposition of blood transudation and similar substances. Culture experiments were made, the substances being compared with carbolic acid and sublimate, and the results seem to show that this substance is one of the most active preventives of fermentation. Experiments were also made on two dogs, ½ of a grain of fluoride of sodium being daily injected, by means of a catheter, into the stomach. There was a progressive loss of weight, which increased in intensity when the dose was increased. There was no alteration in the blood at first, although later in the poisoning there was found to be a reduction in the amount of hæmaglobin, the breath possessed a fetid odor, and there was ulceration of the gums. At first vomiting was produced; no changes were noticed in the blood-corpuscles. Albumen and blood-cells were found in the urine, and there was progressive loss of appetite, and after a few days death was produced. On post-mortem examination general anæmia of the tissues was noted, subpleural ecchymoses, and heart-clots, the mucous membranes of the stomach and intestine were pale and covered with mucus, the kidneys were somewhat whitish in their cortical substance, and the capsule was readily removed.

This experiment lasted forty days, thirty grains of fluoride of sodium in all being given. A second experiment produced somewhat similar results, greater loss of weight taking place in spite of abundant feeding, while a third experiment, in which especial attention was devoted to the influence of fluoride of sodium on the excretion of nitrogen, seems to show that this salt diminishes tissue-change.

THE PHYSIOLOGICAL ACTION OF POTASSIUM FERROCYANIDE.

In the *Bulletin Général de Thérapeutique*, May 15, 1890, Professor Combemale and A. Dubiquet publish a long experimental essay as to the physiological action of potassium cyanide, and they summarize their results as follows:

1. Potassium ferrocyanide is not poisonous to animals. In the dog it possesses no diuretic properties.

2. In animals which do not vomit, such as the guinea-pig, for example, even in small doses, it possesses a certain diuretic power, which is manifested for about three hours after the administration of the dose.

3. In the dog, after repeated administration, the cyanide of potassium produces intestinal disturbances, and vomiting is invariably produced if the dose reaches or exceeds 12 grains for every two pounds of body-weight, no matter what may be the degree of the concentration of the solution.

4. No constant effect is produced either on the temperature, circulation, respiration, or nervous system.

5. The ferrocyanide is decomposed in the economy, and is eliminated in the urine in

the form of ferricyanide when the dose in the guinea-pig does not exceed 7 grains for every two pounds of body-weight.

6. The diuretic action of potassium ferrocyanide appears to depend upon the liberation of the potassium and the conversion of the ferrocyanide into the ferricyanide, and potassium salts are thus immediately formed whose diuretic properties are well recognized.

RHUS AROMATICA IN ENURESIS.

In the *Annals of Gynæcology and Pædiatry* for May, 1890, Dr. W. M. Powell reports sixteen cases of enuresis cured in children from 2½ to 18 years of age, which had been under treatment at different times at the dispensaries but without relief. All of the cases reported were free from phimosis or preputial adhesions, and in all cure was accomplished in about one month's treatment with the fluid extract of *Rhus aromatica*.

The remedy was given usually with compound tincture of cinchona or elixir of calisaya bark, Dr. Powell recommending the following formula for young children:

℞ Ex. rhois aromat. fl., f℥iii;
Elix. aromat., f℥iss;
Aq. cinnam., q.s. ad f℥iii. M.
Sig.—Half-teaspoonful, to be increased to one teaspoonful, four times a day after eating.

Much stress should be laid upon diet and general regimen. The quantity of drink should be restricted, and no fluid should be allowed after four or five o'clock in the afternoon for some time after the child is considered cured. The child should be taken up to urinate late at night, early in the morning, and, if necessary, once during the night, and should always be thoroughly awakened.

Very little meat should be allowed if the patient shows any rheumatic symptoms; indeed, children do better without it, owing to the effect it has of acidifying the urine, which irritates the bladder and provokes expulsion.

The child should be kept in the fresh air as much as possible, provided the weather be fine, and allowed to exercise, care being taken to have flannel next to the skin and the feet well protected with stout shoes. The child should be given a cool or even cold sponge-bath each morning, with a tablespoonful of sea salt added. The body should then be briskly rubbed with a moderately coarse bath-towel, especially in the region of the spine.

Of course the above rules are out of the question in dispensary or poor practice.

SUPERFICIAL SUTURING OF WOUNDS.

The best method for uniting wounds is no new question before the profession. Great diversity of opinion has prevailed, and endless articles have been written from the earliest infancy of surgery to the present time, advocating such metals as silver, lead, iron, or steel. The use of the silk or catgut ligature has its disadvantages in the old method of sewing up wounds, which is certainly not the quickest, not the least painful, and decidedly the most repulsive to the patient, and few will submit to that treatment unless first under the influence of some anæsthetic. In uniting wounds, therefore, of the soft parts, or bringing their edges together so as to promote union *per prima*, to obtain as little a cicatrix as possible, with as little delay and pain to the patient, should be the object of every practitioner, especially the surgeon. We find, however, many practitioners, if called upon to dress an incised or lacerated wound, will proceed to unite the same by interrupted sutures of silk, or endeavor to maintain the wound in proper apposition by strips of adhesive plaster; especially is this latter method adopted if the solution of continuity be sustained on the face or head, owing, as is well known, to the irritating influence of the silk suture and the susceptibility to erysipelatous inflammation of those parts. We have all, no doubt, experienced great inconvenience and delay with the use of the adhesive plaster, and no matter how well adjusted the ends of the wound might have been a few hours ago, it will invariably be found on the next visit that there is a stretching propensity of the plaster, and the edges of the wound, once in perfect apposition, now gape. If the old method of interrupted sutures of silk be used, we will soon obtain the irritating effect of the silk, and as the parts begin to swell the silk begins to cut, and unless soon removed will leave an ugly mark at the seat of the suture. It is well known also that wounds dressed in this way leave underneath a cavity for the accumulation of discharges and subsequent suppuration.

For these reasons Dr. Kierulff, in a paper read before the Los Angeles County Medical Society (*Southern California Practitioner*, May, 1890) highly recommends the results obtained in the suturing of all ordinary

wounds by the automatic suture-needle invented by Dr. John Van R. Hoff, of the United States army. These needles are made of steel, one or two on each side, resembling somewhat a bird's talon, and, when applied, grasp themselves into the flesh on both sides of the wound, and can be most accurately adjusted to any wound by means of a handle. There is no chance for any dislodgement like that of the *serre-fine;* once introduced they become a fixture until removed. It is needless to state that one of the important aids to the speedy union of wounds is the antisepsis of the surgeon's hands, which may be accomplished best by washing with soap and nail-brush; then immerse in ether and then in corrosive sublimate solution 1–1000.

A very efficient method of disinfection of the hands may be attained by brushing them from three to five minutes with potassium soap, and then thoroughly wash with three or five per cent. solution of carbolic acid, one-tenth of one per cent. solution of sublimate, or one-third of one per cent. solution of thymol. Of course it is possible that these solutions may not be accessible, but no surgeon should ever be found without an antiseptic tablet of corrosive sublimate.

The wound should be treated according to the Von Bergmann method, and if possible absolute hæmostasis procured. The edges, now accurately adjusted, will be held in like manner by these needles, and the pressure made by them on both sides of the wound gives the desired acupressure for arresting hemorrhage that may exist. The dressings should be dry, sterilized gauze, impregnated with boracic acid or iodoform powder, or the parts may be dusted with the powder before applying the gauze. Should the injury prove to be a laceration of the scalp, one can readily perceive the advantage over the old method, in being able to unite the wound without the necessary preparations incident to wounds of this kind.

The suture-needle is generally removed in about forty-eight hours after the first dressing, and strips of adhesive plaster used instead. If the wound should be of any length and depth, then every alternate needle is removed, as the case may be. This method over the old manner of suturing wounds is not only a great relief to the physician, but a great boon to the patient. There is no necessity for anæsthetizing, no such delay and anxiety and pain experienced in either placing or removing the suture-needle, as is experienced in the former method, and thus one has not only the quickest but the most simplified method for uniting wounds and promoting their union by first intention.

ECTOPIC GESTATION, ESPECIALLY WITH REFERENCE TO DIAGNOSIS AND THERAPEUTICS.

At the meeting of the New York Medical Association, held in Brooklyn on May 27, 1890, Dr. George T. Harrison, of New York, read a paper on the above subject (*Medical Record*, June 14, 1890).

In some preliminary remarks on the pathology of this anomaly, he said the doctrines recently taught by Lawson Tait and John Strahan were diametrically opposed to the truth. In regard to etiology, partial peritonitis, producing flexion and constriction of the tube, was, as stated by Virchow, a potent factor in the production of tubal pregnancy. The changes produced in the tube by catarrh and blennorrhœa were also a frequent cause of this variety. Myomata of the uterus and polypi of the tube in some cases played a conspicuous *rôle*. As a matter of positive knowledge it might be stated that in all cases of ectopic gestation the uterus during their development underwent the same changes as in the beginning of normal pregnancy.

As to the possibility of ovarian pregnancy, Virchow had recently declared that in his opinion no doubt could exist in regard to its occurrence, and in Winckel's text-book on obstetrics there was an illustrative drawing of a beautiful example of this form of extra-uterine pregnancy. Whether primarily the fertilized ovum could become attached to the peritoneum and undergo development (abdominal pregnancy) was a matter of doubt, because it had not been certainly demonstrated that tubal and ovarian pregnancy could be excluded in the cases heretofore investigated.

In tubal pregnancy, which was the form most frequently met with in practice, the rupture, which ordinarily took place early in pregnancy, might occur either into the broad ligament or at the upper periphery of the tube into the abdominal cavity. The doctrines taught by Tait and adopted by Strahan, upon the relations of tubal pregnancy to retro-uterine hæmatocele, were radically wrong. What he called extraperitoneal hæmatocele ought to be called peri-uterine hæmatoma, or simply hæmatoma; while the term retro-uterine hæmatocele should be limited to those blood tumors occasioned by effusion

of blood into a part of the peritoneal cavity segregated from the rest of the cavity by pseudo-membranes, Douglas's pouch usually being the seat of this effusion. What Tait called an intraperitoneal hæmatocele was not a hæmatocele at all, but a free effusion of blood into the abdominal cavity, there being no tumor displacing the uterus forward. If, however, after rupture of a tubal pregnancy, the extravasation of blood took place at a part of the abdominal cavity by pseudo-membranes (which would naturally be Douglas's pouch, between rectum and uterus), the blood would separate the walls of this space, displacing the uterus forward, encroaching on the space of the rectum, and forming, as a rule, a globular, well defined tumor.

Such blood tumors could also be formed by a somewhat different mechanism, that is, if the hemorrhage persisted for some time and was moderate in degree, and the pelvic cavity was closed above by blood coagula or by inflammatory adhesions. Effusion of blood into the broad ligament gave rise to a blood tumor beside the uterus, a true hæmatoma. The correctness of these views was attested both by clinical data and post-mortem observations; and in at least three instances Dr. Harrison was enabled to diagnosticate positively the existence of adhesions between the uterus and rectum, the remains of previous partial peritonitis, in the subjects of which hæmatocele was subsequently developed. The two conditions, —retro-uterine hæmatocele and hæmatoma —could, as a rule, be readily distinguished. Tait simply ignored the existence of hæmatoma in its true significance, there being for him only extraperitoneal hæmatocele, properly called hæmatoma, and free extravasation of blood into the abdominal cavity. To refute this error it was only necessary to quote the high authority of Virchow and of such competent observers as Ziegler, Klebs, and Coates.

As demonstrated by Karl Schroeder, rupture of a tubal pregnancy was one of the most frequent causes of retro-uterine hæmatocele. The cases of Hart, Coates, Maury, and others proved that the rupture might take place into the broad ligament and result in the formation of a hæmatoma; but the facts of pathological anatomy and clinical observation in other cases could only be explained on the hypothesis that the above explanation of the origin of retro-uterine hæmatocele was correct.

In regard to the possibility of diagnosticating ectopic gestation in the early months of pregnancy, he quoted Tait's opinion in the negative, and remarked that such scepticism was unjustifiable in the light of recent experience. He had himself seen four cases of tubal pregnancy prior to rupture, and in one of them the diagnosis was confirmed by the extrusion of the decidual membrane from the uterine cavity. It was true, however, that these cases were not generally seen until rupture had taken place. Dr. Harrison said he concurred fully with Veit in regard to a diagnostic sign, to which he called attention. This was the pecular softness of the pregnant tubal sac, and it was not found in any other variety of tubal tumor. In addition, the pregnant tube showed a degree of elasticity peculiar to itself. After blood had been effused into the tube the differential diagnosis became much more difficult, since under these circumstances the tube was much more tense and harder to the touch.

As a rule, women who were the subjects of ectopic gestation did not invoke the aid of the physician until symptoms of rupture had appeared. The clinical phenomena then presented were those of a free hemorrhage into the abdominal cavity, or those pertaining to hæmatocele or hæmatoma. The diagnosis was made absolutely certain if decidual membrane was extruded from the uterine cavity accompanied by moderate hemorrhage. In the later months of ectopic gestation the diagnosis of pregnancy was generally easy; but the demonstration of the fact that the fœtus was outside of the uterus might offer difficulties. Accurate bimanual palpation, however, would ordinarily lead to the recognition of the true condition.

In the matter of treatment, Dr. Harrison said he was in entire agreement with the views of Olshausen. In the first months, before rupture, if the diagnosis seemed certain, laparotomy was indicated. After rupture had occurred, during this period, operative interference was indicated only when the symptoms assumed a threatening character. When the first months had passed, if the ovum continued to grow, operation was called for, and the sooner the better. If possible, the entire fœtal sac should be extirpated. If not, it should be sutured to the abdominal coverings and drained above. In individual appropriate cases the future would have to decide whether it is not best to leave the placenta and immediately close the abdomen. Electricity, while it would destroy the fœtus, would not cure the patient.

THE TREATMENT OF ACUTE AND GONORRHŒAL RHEUMATISM WITH PHENACETIN IN LARGE DOSES.

The treatment of rheumatism has been greatly facilitated by the discovery of the new antithermic and analgesic remedies. Antipyrin has been found to possess considerable efficacy in the treatment of rheumatism; but, unfortunately, the opinion as to its value, which at first followed its employment in this affection, has been largely modified by the great frequency with which relapse occurs.

Nevertheless, numerous observations are on record in which antipyrin is claimed to produce more rapid cure of acute articular rheumatism than even salicylic acid, the elaborate reports of cases by Bernheim, Germain Sée, Dujardin-Beaumetz, and Guttman giving the result of twenty-five days for antipyrin and thirty-five days for salicylic acid before cure is produced. These physicians all favor the employment of antipyrin on account of its facility of administration, its freedom from poisonous effects, and the rarity of any unsatisfactory symptoms, which so frequently follow the administration of salicylic acid; such as ringing in the ears, depression of the heart, or dyspnœa.

The only objection to the routine employment of antipyrin in the therapeutics of rheumatism, if the tendency to relapse is not admitted, is the large doses required, since nearly all authorities deem that less than from sixty to one hundred and twenty grains in the twenty-four hours is insufficient. Such large quantities of antipyrin are apt to produce gastric disturbance, while, further, the impression does not seem unwarranted that the constant employment of these large amounts is not entirely free from danger.

In the *Bulletin Général de Thérapeutique* for May 15, 1890, Dr. Refat places himself on record as an ardent supporter of the great value of phenacetin in the treatment of acute and gonorrhœal rheumatism. Experiments have shown that, even in as much as 30 grains of phenacetin for every two pounds of body-weight, poisoning is not produced, and consequently it may be administered in large doses without serious inconvenience, with the single exception that it tends in large doses to produce profuse sweating, and therefore more or less depression. More than a year ago, Dr. Refat writes that he commenced to employ phenacetin in rheumatism, beginning with a total dose of forty-five grains, taken in divided doses, at intervals of three hours during the day. In the majority of cases he found that this quantity was insufficient in acute rheumatism where more than one joint was affected, and it was ordinarily necessary to increase the dose about fifteen grains each day until pain was relieved. He rarely, however, exceeded ninety grains in the twenty-four hours, or, at most, one hundred and twenty. After having found the quantity which was necessary to produce amelioration of the patient's condition, this amount was persisted in for three days, and then again gradually diminished until the patient was only taking forty-five grains a day, and this was persisted in for a week. The average duration of treatment under this method the author claims to be about seventeen days for moderate cases and twenty-one days for those of greater intensity. If these results are compared with the average duration of treatment required by antipyrin, it is noted that there is considerable to be said in favor of phenacetin. The author's cases were sixteen in number, and the majority of them were of an extremely severe character. It must be remembered, however, that phenacetin is not as free from danger of accident as the author would appear to claim, since it may lead to the production of profuse coliquative sweating, cyanosis, and uræmic accidents, and several cases of marked poisoning by phenacetin are on record.

As regards the treatment of gonorrhœal rheumatism, the author refers to a characteristic case in which salicylate of sodium produced no influence either on the pain or on the general symptoms. Phenacetin was given in doses of 15 grains every four hours, and on the very next day improvement was noted; the patient had passed a good night, and, after the repetition of this treatment the next day, seventy-five grains being given, the pain had entirely disappeared, although movements produced slight suffering. Phenacetin was then continued for several days in the same dose, and pain gradually decreased. One week after, the patient was apparently entirely cured, although there was some atrophy of the triceps muscles, which was relieved by continued employment of electricity.

Two other cases are also referred to, in the first of which phenacetin produced complete relief within a week, while in the second iodide of potassium and salicylic acid had been taken without producing any effect, and phenacetin produced almost entire cure within

two weeks. Although the author only reports three cases of gonorrhœal rheumatism, yet the result seems so remarkable that further trials of this remedy are apparently warranted.

THE THERAPEUTIC POWER OF ANEMONINE.

We have already alluded to the value of the different preparations of this member of the Renonculaceæ group, anemone pulsatilla, as recommended by Huchard and Eloy in diseases of the heart, and recently it has been further recommended by Dr. Bazy in the treatment of gonorrhœal orchitis. The latter, in his hospital service, as reported by Dr. Dormant in his thesis on this subject, relates forty-three cases of this affection, in which thirty-seven were perfectly cured without any other medication whatever.

Struck by these facts, Dr. C. Bovet has tested the value of this drug in similar pathological affections of the female pelvic organs, employing first the tincture and then the active principle anemonine. His results, the author claims, warrant him in designating anemonine as the analgesic *par excellence* for reflex painful affections of the uterus, especially in the diverse pathological conditions which are accompanied by menstrual pain, whether dysmenorrhœa or amenorrhœa, or whether the symptoms result from metritis or perimetritis, or inflammation of the ovaries. He states that his experience in all comprises thirty-four cases, of which twenty-two were of difficult menstruation without discoverable anatomical cause, eight cases of metritis and perimetritis, two of uterine prolapse, and two of ovario-salpingitis. The author claims that in all of these cases anemonine served to relieve pain within forty-eight hours. He gives detailed notes of two cases, from which we infer that his ordinary mode of administration is to give 1/6 of a grain of anemonine in red wine.

THE PHARMACOLOGICAL PROPERTIES OF ULEX EUROPÆUS.

From its botanical position it might be presupposed that *Ulex Europæus* would possess a certain amount of activity, for it is closely allied in botanical characteristics to spartium and cytisus, which, on account of the alkaloid sparteine in spartium scoparium and the alkaloid cytisine in cytisus, are recognized as active poisons. The twigs are frequently used as a substitute for tea, and the young sprouts as a vermifuge for cattle.

The first chemical examination of this plant was made simultaneously in England and France by A. W. Gerrard and Pinet, who recognized in the ulex the presence of an alkaloid which they termed "ulexine." According to these authors ulexine has the formula of

$$C_{11}H_{14}N_2O,$$

and crystallizes out of chloroform in colorless and odorless crystals. These crystals are free from water, are very hygroscopic, and readily soluble in water, insoluble in ether, and deliquescent in a moist atmosphere. Ulexine has a strong taste, and is capable of precipitating cocaine, quinine, and strychnine out of solutions of their salts, and is even able to liberate ammonia from solution of its salts. If sulphuric acid is added to the nitrate of ulexine a yellowish-red color is produced; with chloride of iron, ulexine and its salts give a red color, which disappears on the addition of water. If bromine is added drop by drop to a solution of ulexine in chloroform, a white precipitate, which is probably monobromulexine, is formed, while the addition of more bromine leads to the development of an orange-red color, due to the presence of tribromulexine, with the formula

$$C_{11}H_{14}Br_3N_2O.$$

From the residue, after the extraction of ulexine from the seeds, a second base remains, soluble in ether, which is totally different from ulexine. It has chemical characteristics closely in accord with those of cytisine, extracted in 1865 from the *Cytisus laburnum* balsam by Husemann and Marmé, and the similarity is further extended in the almost identical chemical composition, and in numerous other respects, especially as regards behavior to different tests.

Gerrard and Symons, however (*Pharmaceutical Journal and Transactions*, June 14, 1890), do not admit that these two alkaloids are identical, and, in fact, claim that while ulexine and cytisine have much in common, there is quite as close a resemblance between eserine and sparteine, both of which are alkaloids obtained from plants belonging to the same natural order, and in percentage composition they are not far removed from pyrodine, nicotine, and pilocarpine.

They tabulate the difference between cytisine and ulexine as follows:

Cytisine. $C_{20}H_{27}N_3O$.	Ulexine. $\frac{1}{2}C_{22}H_{26}N_4O_2$.
Permanent in air.	Very hygroscopic.
Sublimes completely, forming splendid crystals.	Refuses to sublime in air without decomposition, and when heated *in vacuo* does not sublime to any extent at 225° C.
Scarcely soluble in chloroform.	Freely soluble in chloroform.
Formula weight, 324.41.	Formula weight $\times$ 2379.34.

Nevertheless, numerous experiments made by different authors have shown that there is likewise a close analogy between these two alkaloids as regards their pharmacological properties.

The properties of ulexine have been recently subjected to elaborate study by PROFESSOR KOBERT in the Pharmacological Laboratory of the University of Dorpat, and his results published in an original communication in the *Deutsche Medicinische Wochenschrift* for May 8, 1890.

His experiments show that these two alkaloids are practically identical, and their properties are described as follows:

In small doses given subcutaneously to animals an evident increase of blood-pressure is produced. If extremely small doses are given, the rapid excretion of these alkaloids through the kidneys may prevent any effect on the blood pressure, since excretion may be quite as rapidly, or even more rapidly, accomplished than absorption. Both these alkaloids, therefore, on these grounds, possess diuretic properties, even in cases of depressed blood-pressure. This action is, however, a transient one, and passes off in a few hours, and cannot be compared in intensity to the corresponding action of digitalis, principally for the reason that two of the active constituents of digitalis are only with difficulty absorbed, and are with still greater difficulty excreted, and, as a consequence, a prolonged action is produced. Cytisine and ulexine, on the other hand, are both rapidly absorbed, and are likewise excreted with great rapidity; while digitalis acts simultaneously in increasing the action of the heart and producing contraction of all the blood-vessels, the diuretic action of the two alkaloids under consideration rests only on the irritation of the vaso-motor centre and the consequent increase of blood-pressure, but are without any action on the heart itself. In this connection Professor Kobert is in opposition to Dr. Bradford, who has claimed that the increase of blood-pressure may be produced even in paralysis of the vaso-motor centre. Professor Kobert, however, states that in isolated organs no vascular action whatever can be produced through these alkaloids. In the administration of doses somewhat larger than those necessary to increase blood-pressure, symptoms of further central irritation follow the administration of both these alkaloids to warm-blooded animals, the most marked of these symptoms being vomiting, convulsions, and dyspnœa, progressing towards respiratory paralysis, which is the cause of death in fatal poisoning.

If, however, life be prolonged by artificial respiration, a second interesting stage results, in which the ends of the motor nerves are paralyzed in precisely the same manner as follows the administration of curare. This stage is likewise produced with great readiness in frogs; the muscles are, however, entirely unaffected. The ulex is to a certain extent used as a food for cattle, a custom which Professor Kobert shows is of great danger not only to the cattle but also from the fact that the ulexine is excreted in the milk, and a case is on record in which a child was poisoned through cytisine excreted in the milk of a goat fed with cytisus.

Professor Kobert also calls attention to the fact that a second alkaloid is contained in the ulex, which is, however, in its action entirely different from ulexine. This second alkaloid is also poisonous, whether given directly or whether contained in the milk of animals into whose diet this substance enters.

Professor Kobert believes that this remedy will be of considerable value in therapeutics from the property which it possesses, in comparatively small doses,—of $\frac{1}{30}$ to $\frac{1}{12}$ grain of the nitrate,—injected subcutaneously, of, within half an hour, producing rapid increase of blood-pressure, especially if the pressure has been considerably below the normal. Clinical experiments as to the use of this remedy are, therefore, highly desirable.

WHAT CAN BE EXPECTED FROM LOCAL TREATMENT IN HAY FEVER AND PAROXYSMAL SNEEZING?

At the meeting of the West London Medico-Chirurgical Society, held May 2, 1890, DR. SCANES SPICER pointed out that the symptoms of hay fever are pre-eminently perversions or exaggerations of the normal nasal reflexes plus signs of nasal irritation; this being so, careful examination of the nose and naso pharynx was an essential preliminary to the intelligent treatment of any given case (*Medical Press and*

Circular, May 21, 1890). Careful examination disclosed hyperæmia with hyperæsthesia, either diffuse or in localized patches; and associated or not with gross structural deformities, etc., of the nasal passages. The relation of these hyperæsthetic areas to the external irritant on the one hand, and to the involved nerve-centres (probably bulbar) on the other, were considered, and the various ways in which it might be sought to arrest the disease indicated. The general and local treatment of hay fever was then considered, and the advantages pointed out of the medicated nasal cylinders, which the author had devised, in that (1) they permitted free nasal respiration during use; (2) they could not slip back into the pharynx during sleep; (3) they caused the affected tract to be soothed and bathed by the medicament for many successive hours. Local treatment, more especially by the galvanocautery, calculated to modify the peripheral hyperæsthetic area, so that they no longer conveyed undue stimuli to the nerve-centres, had been of late attended by the most favorable results in the practice of the author and of many others.

INHALATIONS OF HYDROFLUORIC ACID.

Inhalations of hydrofluoric acid in the treatment of pulmonary lesions seem recently to have been less employed than was the case but a short time ago. Dr. Garcin has, however, persisted in the employment of this remedy, and in *La Pratique Médicale* for May 27, 1890, he gives the results of his observations.

He believes that hydrofluoric acid is a microbicide of the most marked nature in destroying the virulence of the tuberculous agent, or, at least, in protecting the pulmonary tissue from its ravages. He claims that the results of this method of pulmonary antisepsis are constant in their rapidity and favorableness, and the improvement which follows their employment is sufficiently prominent to almost warrant the statement that cure has been effected.

He claims that in the great majority of cases inhalations of hydrofluoric acid considerably improve the general state and permit the patients to resume their ordinary occupations. The coughing is suppressed, dyspnœa relieved, sweating overcome, and the appetite and strength return and the body-weight increases.

If these results are constantly obtained, or even ever obtained, the great value of the method is evident, especially as regards the gastro-intestinal canal. Nevertheless, even Dr. Garcin, enthusiastic supporter of this method as he is, does not claim to cure all cases of phthisis, and his reservations go largely to add to the value of his results. He claims, however, that where the organic lesions already produced are not themselves capable of leading to a fatal issue, that then improvement may be expected.

TREATMENT OF PHTHISIS BY INHALATION OF SUPERHEATED AIR.

At the meeting of the Clinical Society of London, held May 23, 1890, Mr. H. H. Taylor related some cases illustrating the "Treatment of Phthisis by the Inhalation of Superheated Air" (*Lancet*, May 31, 1890). Four cases of pulmonary phthisis were treated, two complicated with laryngeal phthisis. The air was inhaled at about a temperature of 300° F. The inhalations appeared to cause no inconvenience, neither the temperature, pulse, nor respirations increasing, nor did the skin act more freely. The results obtained were insufficient to base any definite statement as to the value of this treatment. Two cases of pulmonary cavities, which had been tapped and drained, were then made use of in order to determine, as far as possible, if the heated air extended beyond the bronchi. The communication between the mouth and the cavities was very free. A thermometer in each case was placed in the cavity, but after inhaling air at a temperature of 300° F., it only rose one degree in one case; in the other there was no result at all. It would thus appear that the air was quickly cooled down to the normal temperature of the blood, and never reached the smaller tubes above that temperature. If this were the case, it completely disposed of any theory that this treatment could have a specific effect on the course of phthisis.

The President asked whether any theory was promulgated which showed why superheated air should be advantageous, and whether the bacilli were diminished by the treatment.

Mr. Taylor replied that Weigert was responsible for a theory that the hot air killed the bacilli, which could only live in a small range of temperature; but this was impossible, for the hot air was cooled before it reached the lungs. The bacilli had not been found diminished in number or potency.

Dr. Macfarlane knew of one case in Essex in which the treatment had been tried without good result.

Dr. Dawson Williams stated that Dr. Cranstoun Charles had tried it, and, he believed, with good results, though all the reports from America negatived the idea that good could be done by it.

So also at the meeting of the Academie de Médecine, held June 3, 1890, Dr. Dujardin-Beaumetz (*La Médecine Moderne*, June 5, 1890), stated that it was extremely important to do away with the delusions which had obtained a certain amount of credence among the general public, and even among physicians, as to the possibility of the cure of phthisis by treatment with hot air.

The idea originated with Weigert, who imagined that it would be possible to destroy the bacilli of tuberculosis while within the lung by the inspiration of hot air, but Mosso and Rondelli have shown that even when the air, at a temperature of 100° C., was inspired, when it reached the alveoli its temperature, as expressed by the author, was no higher than the air in the rectum.

These authors, also, have called attention to the fact that the only value of this method is due to the respiratory gymnastics which it necessitates. So also in Russia, Weigert's method has been proved to be unaccompanied by any utility; while, on the contrary, it has even been shown that the inspiration of extremely hot air is by no means free from danger, and is a procedure which should be absolutely discarded from therapeutics.

In the discussion which followed this address, Dr. Constantin Paul stated that in all the different thermal stations where phthisis was treated, it had for a long time been recognized that when the air became highly heated it was necessary to cease all treatment, or the condition of the patient was greatly aggravated.

Dr. Verneuil, on the other hand, believed that this condemnation of this treatment was somewhat premature, since in his hospital practice he had made some experiments on local tubercular affections by means of very hot air, and his results appeared sufficiently brilliant to encourage their further trial. He also stated that his assistant, Dr. Clado, had for three years been employing inhalations of hot air in laryngeal phthisis. In one case the patient was regarded as actually cured. He had always well separated the inhalations, although, of course, it must be admitted that the temperature of air in contact with the larynx must necessarily be much higher than after it had penetrated to the pulmonary alveoli.

PULSATION IN THE UVULA AS A SIGN OF AORTIC INSUFFICIENCY.

In ordinary conditions of health there is no pulsation in the soft palate or uvula that is visible on simple inspection, so that when such a pulse is present it may, as a nearly constant rule, be taken as a sign of disease. In a recent memoir (*Charité Annalen*, xiv., 1889), Dr. F. Müller, of Berlin, has reported a case in which he observed rhythmical pulsations of the soft palate. The case was one of aortic insufficiency. A slight attack of pharyngitis led to an inspection of the throat, when it was seen that with each carotid pulsation the tonsils and pillars of the fauces moved slightly towards the median line, while the soft palate and uvula were somewhat lowered, so that there was a rhythmical contraction of the faucial opening at the same time that there was an increase in the redness of the mucous membrane. Inspection of the throat after the inflammation had subsided showed the pulsations still present, though somewhat less pronounced. His attention having been thus called to this peculiar condition, Dr. Müller searched for it in six other cases of aortic insufficiency, and found it four times in a total of seven cases.

In an article in the *Gazette Hebdomadaire de Médecine et de Chirurgie*, March 15, 1890, Dr. P. Merklen quotes these cases and refers to an observation of his own. The patient was a young man, who had a double mitral and aortic lesion, with marked hypertrophy of the auricle and left ventricle. The sublingual capillary pulse was distinct, and, in addition, the palatal pulse was very evident on inspection. This was more particularly marked in the uvula, which could be seen to swell synchronously with the carotid and radial pulses.

Although, as Dr. Merklen remarks, this sign can have no great clinical value as an aid to diagnosis, it would, nevertheless, be interesting to learn with what constancy it is present in cases of aortic insufficiency, and whether the pulsation is ever visible in any other conditions. Müller never observed it in any other cases than those of aortic insufficiency, and Merklen has also examined many patients without this condition, but failed to find any pulsation. It is certainly not present in all cases of aortic insufficiency, for Müller looked

for it in four such cases, but could not detect it. The palatal movements are not caused by transmission of the carotid beat, but are probably produced in the same way as the capillary pulse seen under the finger-nails in cases with similar cardiac lesions.—*New York Medical Record*, May 31, 1890.

COLD BATHS IN MEASLES.

The Paris correspondent of the *British Medical Journal* (May 31, 1890) states that M. DIEULAFOY, at the Société Médicales des Hôpitaux, read notes of a case of measles, which he described as hypertoxic, and threatening the life of the patient, a girl, aged 16. Her condition suddenly changed on the sixth day; the temperature suddenly rose; the pulse was 130 to 140 per minute; a very small quantity of urine was passed, and delirium set in. These symptoms increased in gravity, and were accompanied by cardiac syncope. Although menstruation had commenced, the patient was placed in a cold bath 24° C. (75.2° F.). She was seized with a violent shivering fit, but the temperature immediately fell. She was kept in the bath for a quarter of an hour, and the improvement was manifest, notwithstanding the shivering fit, which ceased only when she was taken out. On the eleventh day the baths were discontinued; on the seventeenth day the temperature was 37° C. (98.6° F.). M. Duponchel has also treated two adult patients suffering from measles with cold baths. The temperature was above 41° C. (105.8° F.). Improvement was observed almost instantaneously. M. Huchard considers the important symptom in these serious cases of measles to be the syncope of the heart; for this he administers daily from 2 to 3 grammes of caffeine by hypodermic injection; he has for the last seven years adopted this treatment in infectious diseases, and found the results excellent. The caffeine should be tried before the bathing.

THE MODE OF ADMINISTRATION OF CARDIAC REMEDIES.

The therapeutics of cardiac affections has been greatly advanced recently not only in the addition of numerous cardiac tonics to our list of remedies, but also in the acquirement of important details in the administration of the older remedies, by which their efficiency has been greatly advanced.

GAUTHIER especially has devoted himself to the study of this subject, and an analysis of his work, as published in the *Wiener Medizinische Blätter* for May 22, 1890, is well worthy of notice.

As is well known, the administration of digitalis, in the form of powder or pill, is apt to produce vomiting or diarrhœa. The best form is that of an infusion made by macerating the digitalis leaves, and when time permits, it is this preparation which should always be used as the one which gives the most prolonged and intense action on the heart, and which is most efficacious in producing diuresis. The infusion should be given in gradually decreasing doses. Digitalin, as we have already in previous issues emphasized, is by no means a constant preparation, and it does not possess all the properties of the digitalis leaves. Nevertheless, the crystallized digitalin is of use where an extremely rapid action is desired, although ordinarily its action is too intense, and therefore dangerous, while its subcutaneous employment is extremely painful, and is apt to lead to the production of abscesses.

Convallaria is also best employed in the form of a maceration, 8 to 10 parts being macerated in 1000 of water, to which syrup may be added and employed the day in which it is made.

Convallarine, the active principle, may be employed in doses of 1/6 to 3/4 or 1½ grains.

Strophanthus is best employed in the tincture (the one officinal in the English Codex being the best) in 5-drop doses three times daily, although 10 to 20 drops may be given once or twice in the twenty-four hours in a single dose.

Adonis may be employed in the form of an infusion or decoction, or its active principle, adonidin, may be given. The infusion seems to be inconstant in its activity, and both of the watery preparations have an extremely bitter taste, which must be covered by syrup. Adonidin may be given in the quantity of from 1/6 to 1/3 grain in twenty-four hours. Its toxic action is ten times stronger than that of digitalis. Caffeine is likewise a reliable remedy, provided it is given in sufficient dose, ordinarily 15 to 30 grains being required. This dose should, however, not be exceeded without great care, as in larger quantities it is not free from danger.

The salts of caffeine are nearly insoluble in water, and are, therefore, not suitable for subcutaneous injections, although the double salts—the benzoate of sodium and caffeine—is an exceedingly valuable preparation. Spar-

teine may be employed, either in the form of an infusion or decoction of the plant, or its active principle, sulphate of sparteine, may be employed, the latter being especially valuable for its action on the heart in doses of from ¾ to 4 grains, while the infusion is especially endowed with diuretic properties.

CALOMEL AS A DIURETIC.

At the meeting of the American Medical Association, held May 20, 1890, before the Section on Practice of Medicine, Materia Medica, and Physiology, Dr. George Fackler, of Cincinnati, introduced this subject by first reviewing its literature (*Medical Record*, May 31, 1890). It was of recent date and limited to the observation of few experimenters. The author related three cases of heart-disease attended by œdema, in which calomel, administered in doses of about 4 grains three times daily, usually continued four days or longer, caused decided polyuria and disappearance of ascites and œdema. In most of these cases digitalis and other of the older diuretics had failed. In a fourth case, in which the cardiac trouble was far advanced, calomel also failed to act as a diuretic. The drug, when administered in this manner, caused slight, sometimes severe, salivation and stomatitis. It was desirable that the calomel be retained as long as possible, in order that it might be changed into an albuminate, in which form it produced its action. His conclusions were as follows: 1. Calomel, and, in all probability, other mercurial compounds, possess diuretic action. 2. If given in proper doses, the effect of calomel becomes evident from the second to the tenth day. Continuation of the treatment during diuresis will not alter or increase the effect. 3. Its action is most marked in dropsies due to heart-disease. Its action in dropsies of hepatic origin is not to be relied upon. Pathological changes in the kidney prevent or abridge its action. 4. Small doses are of no avail. 5. The diuretic action, in all probability, is due to the irritating effect which mercury exercises during elimination upon the renal epithelium.

Dr. Caldwell, of Florida, had produced diuresis by bichloride of mercury, $\frac{1}{10}$ of a grain or more three times daily, in combination with muriate of ammonia, and had not been troubled by salivation. By eliminating the ascites and œdema, sleep was obtained and the appetite improved.

Dr. De Saussure, of Charleston, in treating a case of filaria, had observed diuretic effects from bichloride of mercury, and a 10-grain dose of calomel had been observed in Charleston to produce a diuretic effect in certain cases of œdema due to heart-disease, but the action was not so long continued as when administered in the manner described by the author.

A NEW DISINFECTANT.

At the last meeting of the Society of Physicians of Vienna, Dr. Gerlach (*Pharmaceutische Post*, June 1, 1890) stated that when the proper amount of an alkali is boiled in a closed vessel with any fatty acid, resin and animal oil, with or without the addition of alcohol, evaporation being prevented, a mass results, which, after cooling, possesses the property of solubility in almost any proportion in water and of preserving a clear solution.

Any of the higher phenols may be combined in the formation of this preparation. The consistency of the preparation may vary from that of a perfect fluid to that of a soft soap. This compound is described by the author under the name of "lysol," and is stated to possess a greater power in destroying bacteria than carbolic acid, creolin, or carbolic-sulphuric acid, while it is almost free from any poisonous properties. The author states that he has employed it with considerable success in the treatment of wounds. It possesses no irritating properties, although when applied, in one to two per cent. solution, to mucous membranes, it produces a slight sense of burning, which, however, readily disappears. A 3 to 10 per cent. solution is sufficiently concentrated for the treatment of wounds, and the author claims that in such solutions all bacteria, which are liable to be met with in wounds, are, as a rule, destroyed in twenty to thirty seconds. In three per cent. solution it has the properties of a soap. It forms a lather, and is thus applicable for disinfection of the hands. It still remains to be seen whether this communication receives confirmation.

THE ACTION OF GELSEMIUM IN SOME LOCAL SPASMS AND NEURALGIAS.

In the *Journal of Nervous and Mental Diseases* for June, 1890, Dr. M. Imogene Bassette states that for the last two years he has had considerable experience in the use of

gelsemium, and has found that it seems to be serviceable in the treatment of some local spasms, some neuralgias, and of a few distressing and unpleasant head symptoms, such as a feeling of fulness, beating, and throbbing.

The most striking point, however, in Dr. Bassette's report is that the dose of the remedy, even of the same preparation, varies through wide limits for different individuals. Among the cases referred to is one of spasmodic torticollis, the spasm being very severe in character, and being brought on or increased by walking, excitement, and by pressure in the left occipital region. It stubbornly resisted treatment by such means as potassium iodide and bromides, mercury, salicylate, arsenious acid, assafœtida, sumbul, blistering, and the actual cautery.

After the use of the fluid extract of gelsemium great improvement resulted, though it seems that during the treatment considerable unpleasant constitutional effects such as double vision and headache were observed.

For three weeks—from January 31 to February 21—this patient took for the greater part of the time 26 drops, or 13 minims, every two hours, night and day. For another part of this time, alternately, either 13 drops, or 7½ minims, every two hours, or about this amount. For the remaining forty-seven days she took about 13 minims eight times daily. The average taken daily, when the maximum amount was administered, was about one hundred and fifty-six minims. During three weeks—from January 31 to February 21—she probably took between five and six ounces, and during the last forty-seven days in all four thousand eight hundred and eighty-eight minims, equal to eighty-one ounces.

A case of this kind may be worth reporting, both on account of the great benefit derived from the use of gelsemium and as a study of the dosage of this drug.

A case is also related of painless tic or spasm of the muscles supplied by the seventh nerve.

The patient was placed upon the fluid extract of gelsemium, 2 minims four times daily, with directions to increase the dose until constitutional symptoms were produced. When 8 minims were reached she complained of dizziness, dimness of sight, and a feeling of intoxication; but, although some improvement was noted, the continuation or any increase in the dose produced such severe symptoms that treatment had to be discontinued.

Other cases are also alluded to, but, as already mentioned, the most interesting features in Dr. Bassette's report is the great variation in the doses required by different individuals to produce constitutional effects. Dr. Bassette offers as explanation of this, as perhaps analogous to the state of affairs in the case of opiates; for just as, as is well known, persons who suffer severe pain will support enormous amounts of opiates or other narcotics, so it is possible that in cases of local spasm long continued doses of gelsemium will likewise be tolerated.

Dr. Bassette also alludes to the fact that gelsemium habit is not formed, although the drug be taken in large doses for a long time, in this way perhaps explaining the reason for the continued production of unpleasant constitutional symptoms.

In neuralgia of the fifth nerve it would seem that both the therapeutic and toxic effects may be obtained with much smaller doses, for three cases are noted in which extremely small doses of the fluid extract of gelsemium produced decided relief from pain.

It would be a great gain if we could separate those cases of neuralgia in which the drug has a favorable action from those in which it proves inert or of but little benefit. In one case the patient complained of great facial pain, stiffness of the jaw, and pain in opening and closing the mouth. She was put upon 3 minims of the fluid extract, the dose to be increased, and by the time she had reached 6 minims the pain had disappeared, and the relief was probably permanent, as after several weeks she has had no return of the symptoms. In two other cases of ciliary and supraorbital neuralgia the pain was relieved by doses of 3 minims.

Gelsemium is a drug about which differing reports and differences of opinion are common. Cases of poisoning are reported, which show the small amount of this drug which will produce toxic or fatal effects. Boutelle (*Boston Medical and Surgical Journal*, 1874) reports a case of fatal poisoning in a man, aged 24, who took for neuralgia a teaspoonful of Tilden's fluid extract of gelsemium, and repeated the dose in fifteen minutes. Friedrich (*Philadelphia Medical Times*, December 30, 1882) reports the case of a girl of 14, who took a teaspoonful, and in less than an hour began to show physiological effects, later convulsions, and still later unconsciousness came on; but under active treatment she recovered. Sinkler (*Philadelphia Medical*

Times, January 5, 1878) reports the case of a woman who had serious toxic symptoms from taking 5 drops three times daily for ten days, the first dose having produced physiological effects. Dr. De Wolfe (*British Medical Journal*, vol. i., 181, p. 193), for facial neuralgia, took 10 minims of the fluid extract, and repeated this in half an hour. In less than fifteen minutes he was drowsy, and could not keep awake; he was taken with shivering, dizziness, and symptoms of collapse; but under the use of stimulants the unpleasant symptoms passed away.

THE ALBUMINURIA OF OPIUM-EATERS.

At the meeting of the Société Médicale des Hôpitaux, held May 9, 1890, Dr. Huchard stated that he had recently observed three cases of permanent albuminuria occurring in persons addicted to the use of morphine, which terminated in uræmia; and all the symptoms and history of these cases seem to point to the conclusion that this albuminuria was developed as a consequence of the prolonged abuse of morphine; and he further alluded to the fact, noted by Loewenstein, who has related six or seven similar cases, and succeeded experimentally in producing the same result in animals.

In order to explain the pathogenesis in albuminuria produced by morphine, the three following statements may be considered:

1. It may be produced by a special action on the medullary centres.

2. The albuminuria may be consecutive to the paresis of the nervous plexus surrounding the renal artery.

3. Albuminuria may be produced by anomalies of pressure which are capable of producing renal disease.

In order to explain the production of permanent albuminuria in opium eaters, this latter cause must be admitted; in fact, Dr. Huchard states that his researches have demonstrated that morphine is an agent which rapidly and thoroughly decreases arterial tension.

DIAGNOSIS OF GONORRHŒA IN WOMEN.

At the meeting of the North of England Obstetrical and Gynæcological Society, held April 18, 1890, Dr. Sinclair (Manchester) read a paper on the "Diagnosis of Gonorrhœal Infection in Women," of which the following is a summary (*Lancet*, June 7, 1890):

The condition of which this paper treats is of more common occurrence than is yet admitted. Many cases remain undiagnosticated by medical practitioners and even by specialists, hence the treatment remains unsatisfactory. Since Noeggerath's essay appeared, and more especially since Neisse's discovery of the gonococcus, so much attention has been given to the phenomenon produced by gonorrhœa in the female that we have now almost or altogether established a clinical type of the disease. From this it follows that with an attention to the signs and symptoms, which is perfectly practical for any medical practitioner, there is no need in the consulting-room to call in the aid of bacteriology. The diagnostic points are made out partly from the anamnesis, and partly by inspection of the indelible traces which an attack of blennorrhagia leaves on the female genitals. The assistance to be obtained from the patient's recollection of symptoms in a chronic or obsolete case is comparatively little unless the questions are directed to certain points and clear answers patiently elicited. As the disease frequently reaches the uterus, and even the tubes and ovaries, one of the most constant features is a change in menstruation. For the first time in the patient's history there is one menorrhagic period, or perhaps two, and after that menstruation becomes painful, or there is a marked change in the character of the dysmenorrhœal pain. Among the points mentioned as diagnostic of a former attack are the changes in the Bartholian glands or the orifices of the ducts, the persistent turbid discharge from the cervix, and the changes in the ovaries. Only two causes are known capable of producing the changes mentioned, —either puerperal or surgical sepsis,—which may be reckoned as one, or gonorrhœal invasion. Several typical cases were described; these had remained undiagnosticated, although they had undergone more or less prolonged treatment. Many varied, in the remoteness of the time of infection, from three months to eighteen years.

Dr. Wallace said in years gone by gynæcologists had neglected this subject.

Dr. Alexander (Liverpool) said Dr. Sinclair's conclusions had surprised him. In his experience at a large lock hospital, and also the largest lying in hospital in Liverpool, he only remembered one or two cases of pyosalpinx in prostitutes. In private practice the symptoms described by Dr. Sinclair were found most often after abortions or labors. He considered inflammation of the

glands of Bartholin a good test for gonorrhœa; the uterus was affected only rarely.

Dr. Martin (Blackburn) thought that prostitutes seek advice early, and thus escape more than others; but the fact remained that prostitutes are, as a rule, sterile.

HYDRASTINE, BERBERINE, AND OTHER DERIVATIVES OF HYDRASTIS CANADENSIS.

Dr. Marfori publishes in the *Archiv für Experimentelle Pathologie und Pharmakologie* a series of researches as to the physiological action of hydrastine, berberine, and some of their derivatives (*Gaz. Médicale de Paris*, June 7, 1890).

He finds that injected into the veins of a dog, in the proportion of $\frac{1}{64}$ grain for every two pounds of body-weight, hydrastine produces a constant diminution in the volume of the kidneys, the intensity and duration of the effect being in direct proportion to the dose injected. The arterial blood-pressure is increased, as a consequence of small doses of hydrastine, $\frac{1}{20}$ to $\frac{1}{60}$ grain for every two pounds of body-weight. Occasionally there is a preliminary increase of blood-pressure, but this phase, when it exists at all, is transient.

In a dog weighing forty-six pounds an injection of a little less than ½-grain of hydrastine into the veins produced an increase of blood-pressure of about fifty millimetres, and a second injection of the same amount produced such an increase of pressure as to render its registry on a kymographion drum impossible. Large doses of hydrastine always produce manifest reduction in blood-pressure, alternating, however, with transient increases in pressure, coinciding with the changes in volume of the kidney.

Hydrastine in small doses increases the pulse; in large doses it produces an initial acceleration of short duration, soon followed by pronounced slowing; further, a point of considerable importance, the systolic contraction greatly increases in extent as a consequence of injection of small doses of hydrastine; as results of his studies, the author concludes that in certain doses this drug shows as its characteristic effect a considerable diminution in the calibre of the blood-vessels. The acceleration of the pulse which is observed after the administration of small doses of hydrastine is attributable to the excitation of the accelerator nerves of the heart. The slowing of the pulse consecutive to the administration of large doses is due to the excitation of the extra-cardiac centres of the pneumogastric nerve. Hydrastine acts as a stimulant to the nerve-centres, especially those of the spinal cord. In the dose of $\frac{1}{2}$ to $\frac{1}{4}$ grain for every two pounds of body-weight in warm-blooded animals it produced at first acceleration and then a slowing of the pulse, dyspnœa, tonic and clonic convulsions; a phase then of short duration follows, which is characterized by paralytic manifestations, and is again followed by a new stage of convulsions; finally, the animals succumb to the results of the paralysis. Hydrastine is endowed with a certain accumulative action. After being administered to dogs for many days consecutively in small doses it finally produces marked evidences of poisoning. This result is, no doubt, attributable to the slowness with which hydrastine is eliminated. Hydrastine is eliminated apparently exclusively by the kidneys. In the animals which were experimented on by Dr. Marfori no traces of hydrastine were found in the bile.

Berberine, which is considered as another active principle of hydrastine, produces in large doses an elevation in blood-pressure, which has been already recognized by Curci and Shurinoff.

The experiments of Dr. Marfori confirm this fact, though indicating that in small doses berberine is without any action upon blood-pressure, on the blood-vessels, or on the volume of the kidneys. In his experiments, when berberine and hydrastine were administered conjointly in small doses into the blood-vessels, the effects were the same as would have followed the administration of small doses of hydrastine, or corresponding doses of hydrastinine. It would thus appear that the administration of berberine is without influence in the consecutive effects of the administration of the two alkaloids. Finally, the results of Marfori may be regarded as confirming the results of clinical experience,—namely, that in hydrastis canadensis we have a remedy which possesses great value as a hæmostatic. From the experiments on hydrastinine, produced by the action of oxidation on hydrastine, Dr. Marfori concludes that hydrastinine, while possessing most of the physiological properties of hydrastine, is less efficacious in its vaso-constrictive influence and in its action on the intravascular pressure.

Hydroberberine, whose molecule contains four atoms of hydrogen more than the molecule of berberine, differs likewise from the

latter in its physiological properties. It produces a depression in blood-pressure, even in animals in whom the pneumogastric nerves had been divided; but it does not produce an increase in blood-pressure when a division of the spinal cord is made below the medulla oblongata. This fact appears to prove that the elevation of the blood-pressure due to its action is attributable to stimulation of the medullary vaso-motor centres.

Opianic acid is another product of the oxidation of hydrastine, but it produces no appreciable physiological effects in comparatively large doses, either in frogs or in warm-blooded animals. It nevertheless possesses considerable action as a prevention of putrefaction.

Hydrastinic acid and berberinic acid, also products of oxidation of hydrastine and of berberine, have likewise given analagous results.

ABORTIVE TREATMENT OF GONORRHŒA.

Two papers were read upon this subject at the Society of Practical Medicine in Paris on the 13th of February, 1890 (*Journal of Cutaneous and Genito-Urinary Diseases*, June, 1890).

In that by Dr. Malécot the treatment by injections of nitrate of silver was discussed. He regards the prejudice against the employment of silver as unfounded, if it is properly applied. Certainly the strong solutions are dangerous, especially if they are used several days in succession. They may provoke discharge of blood, and their too energetic action may compromise the subsequent elasticity of the canal. Furthermore, with the piston syringe the sphincter may be forced and the caustic be uselessly injected into the bladder. He therefore recommends the olive-bulb instillator, which is introduced as far as the muscular sphincter. The sensation of special resistance here felt serves as an indication that the instrument has gone far enough.

The patient first urinates, then the canal is to be washed out with a feeble boric acid solution, and then the instillation made, the first day in strength of 1 to 50, and the following days 1 to 100 or 1 to 150, the solution being retained in the urethra for two or three minutes. The irritant action is only of short duration, and affects only the epithelial layer of the mucous membrane. In the intervals between the acts of urination it is recommended to wash out the urethra with some antiseptic solution,—the permanganate of potassium, resorcin, or bichloride, the latter not stronger than 1 to 10,000 or 1 to 20,000.

Dr. Malécot has obtained excellent results from the salicylate of mercury, in strength of 5 centigrammes to 100 grammes of water, at a temperature of 30° to 40° C. It is a strong antiseptic without being painful. Internal treatment is not wholly neglected, sandal oil, copaiba, etc., being given in the belief that they undergo a change in the economy by means of which they become germicidal. Oppenheimer has shown that urine passed after the administration of 30 grains of copaiba sterilized silk threads charged with microbes. He has also followed Dreyfaus in the employment of salol, in daily doses of 6 grammes, with the same object in view.

Following out this plan, an abortion of a recent gonorrhœa often takes place, and without danger. Only violent inflammation of the urethra should cause one to suspend the treatment. In some cases, without known cause, the method fails.

In the second paper, by Dr. Picard (*Journal de Méd. de Paris*, March 9, 1890), the question as to the efficacy and harmlessness of abortive injections of the nitrate of silver are answered in the affirmative. If we examine into the action of a sufficiently concentrated solution of nitrate of silver we see that it acts upon the mucous membrane of the urethra just as the gonorrhœal virus acts, causing death and desquamation of the superficial epithelium. The difference between their actions and that which explains the efficacy of the treatment is the rapidity with which the silver works, destroying the epithelium at once, while the virus requires several days to effect the same result. The success of the treatment, therefore, depends upon the promptness of its application. It should be made when the first symptoms appear,—that is to say, before the appearance of pus. In practice it is at the time that the patient feels an itching sensation in the fossa navicularis, and perhaps notices a clear drop at the meatus, that the treatment must be instituted. A red meatus, with the lips swollen and everted, turgidity of the glans, and great pain furnish contraindications to the employment of the abortive method. If these parts are normal and the pus is not too abundant and thick, the silver may still be used. The solution he recommends is that of 1 in 25 or 1 in 30. More concentrated it becomes caustic, and the solid stick is not to be thought of,

because it would leave a cicatricial stricture. The Langlebert syringe, throwing a recurrent stream, is recommended, but the author gives preference to the ordinary injection syringe. The pain occasioned is usually moderate. Twenty-four or thirty-six hours after the first injection, if the discharge persists, a second is authorized, provided the parts are neither red or painful.

THE ACTIVE PRINCIPLE OF JEQUIRITY.

A Dutch observer, DR. NICOLAI (*Lancet*, June 7, 1890), has been engaged in a series of observations directed to the elucidation of the question whether the irritant action of the seeds of the *Abrus precatorius*, or jequirity, is due to a non-organized ferment or to bacteria. He found that while a pure culture from the seeds produced no irritation of the conjunctiva, a chemical preparation in which there were no bacteria set up the inflammation characteristic of jequirity. He concludes that the active body is an amorphous ferment or "enzyme," which can be isolated in the form of a white powder. This substance caused conjunctivitis in four or five hours. Its activity was destroyed by a temperature of 180° C. when dry, but a three per cent. solution became inactive after being heated to 78° C. It was also rendered inactive by borax and by prolonged treatment with absolute alcohol. Chloroform, ether, and corrosive sublimate did not affect it. No resemblance could be traced between it and pepsin rennet or diastase. It appeared to have strong toxic properties, for when injected into the venous circulation in rabbits it rapidly proved fatal, causing convulsions and paralysis of the heart.

SANTONIN AND CASTOR OIL.

Having been called upon to dispense a prescription ordering santonin with castor oil, HERR REUTER was led to experiment as to their solubility relations, concerning which contradictory statements have been made. The result was (*Apot.-Zeit.*, May 10, p. 246) practically to confirm a statement by Professor Flückiger, that if finely-powdered santonin be heated with castor oil on a water-bath, even though vigorously shaken, it will not dissolve to the extent of more than four per cent., the greater part of which will crystallize out on cooling. Experiments with 1.15, 2, 2.5, 3, 3.5, and 4 per cent. of santonin showed that it was soluble in castor oil in these proportions when heated on a water-bath, but that from the 1.5 to 4 per cent. solution the santonin separated in handsome crystals on cooling. From the one per cent. solution prepared in small quantities there was only a very slight separation when reduced to a low temperature, but a solution prepared from .5 gramme of santonin to fifty grammes of oil remained perfectly clear and free from separation at a temperature of 15° C. during two days. A .5 per cent. solution remained absolutely clear at 15° C. during four days. The use of finely-powdered santonin and the application of heat are essential, as santonin added to cold castor oil sinks to the bottom, while the viscosity of the cold oil hinders diffusion by shaking. —*Pharmaceutical Journal and Transactions*, May 31, 1890.

INFLAMMATION OF BONES OF TYPHOID ORIGIN.

According to the Berlin correspondent of the *Medical Press and Circular* for June 4, 1890, HERR FÜRBRINGER introduced this subject at the recent Congress of Medicine. He remarked that the subject had never been regularly treated in any work, and that in treatises on typhoid the subject only came in for treatment as a complication, but it had been well described abroad, and especially by French writers. In 1885, Freund gave an account of the literature of the subject, and reported five cases of his own. In the preceding year seventeen cases observed by other authors followed, among which were eight by Ebermaier, who was the first to furnish proof that the affection owed its origin to the typhoid bacillus. The disease consisted in longer or shorter, slighter or heavier, attacks of periostitis and osteomyelitis of a suppurative or non-suppurative form. The attacks befall the most varied parts of the bony structure. A careful examination of the recorded cases show that a large number of the cases described must be excluded from the category of typhoid osteitis. The author had only observed the disease five times in sixteen hundred cases of typhoid fever. The most remarkable case was that of a boy of 7½, in whom, in the course of four months, seven outbreaks of the disease attacked ten different parts of the bony system. The boy recovered, and indeed began to mend from the day on

which the crisis of an attack of influenza occurred, the only good deed, the author remarks, he had ever witnessed from the miserable *grippe*. The other four cases were observed in the hospital Friedrichshain,—two boys aged 12, a man aged 21, and a woman aged 25. The last patient showed a pyæmic temperature curve, with rigors, although suppuration never took place. Disease of the ribs awakened suspicion of a hepatic abscess. Recovery took place in this case also, although the patient was at one time as good as given up. In the third case the trochanter and ischium were chiefly affected, the diagnosis as marked on the note of admission being coxitis. In the fourth case the skull was the part affected, in a rather severe but evanescent manner. The fifth patient died after cessation of the osteomyelitis from hæmatopyopneumothorax, in consequence of bursting of a necrotic collection in the lungs. The author preferred the term osteoperiostitis, as a separation of the osteitis from the periostitis was not possible. His cases confirmed the view of Ebermaier that the typhoid bacilli wandered from the medulla of bones to the periosteum. As regards symptomatology, he remarked quite striking exacerbations of pain, and the frequency of the occurrence of the disease without suppuration. Some of the suppuration cases were due to sepsis, scrofulous tendencies, advanced disease, and possibly improper treatment. Regression took place as in syphilis, but the tophi did not so completely disappear as in that disease.

THE SUCCESSFUL TREATMENT OF CHRONIC PURULENT EMPYEMA BY MEANS OF INJECTIONS OF CORROSIVE SUBLIMATE.

At the meeting of the Société des Hôpitaux, held May 30, 1890, Dr. Fernet read a report of the case of a man, aged 34 years, of alcoholic habit, who, on the 26th of May, 1888, was attacked with pleurisy of the left side. Eight punctures were performed at intervals more or less separated, and in June, 1889, the effusion became purulent. The patient's spirits became depressed, until at the commencement of this year he was a hypochondriac, and had to be taken to an asylum. At this time he had a fistula of the left side, which discharged daily a large quantity of pus from the pleural cavity. He had hectic fever and infectious arthritis. In March, 1890, thoracotomy was performed and a sac opened, which contained a considerable quantity of pus. On April 5 the pleura was washed out by means of a siphon, with a solution of corrosive sublimate of 7½ grains to the quart. Under the influence of this treatment, and without any symptoms whatever of mercurial poisoning, cure was effected, and the fistulous tract was obliterated, while at the same time the mental troubles disappeared.

MANAGEMENT OF HUMAN BREAST-MILK IN CASES OF DIFFICULT INFANTILE DIGESTION.

At the meeting of the American Pediatric Society, on June 3, 1890, Dr. T. M. Rotch, of Boston, in this paper gave an analysis of the human milk in a series of cases, during the time of healthy digestion, and also during indigestion in the infant, showing, at the same time, the bearing of the mother's health and habits, and the amount and quality of food taken, upon the character of the milk (*Medical Record*, June 14, 1890).

Physicians acknowledged that the maternal breast-milk (meaning thereby the average) was the best diet for the infant, but did not seem generally to fully realize the importance of their admission, for not infrequently they forbade the use of this food, and ordered a wet-nurse or hand-feeding, when the infant showed indisposition more or less marked, without taking the trouble to analyze the milk, or inquire into the reasons for its possible unwholesome qualities. Brief reference was made to the various conditions affecting the quantity and quality of the milk, such as the state of the mother's health, exercise, food, mental emotions, length of the intervals between the nursings, etc. The longer the intervals the greater the proportion of the watery elements. In a general way the milk could be looked upon in its normal condition as a secretion, yet as colostrum and under certain unfavorable conditions it took on to a considerable degree the character of an excretion. Marked variations in the milk were almost always shown in the amount of fat and albuminoids which it contained; and, consequently, we treated almost universally these elements. Meat and a nitrogenous diet increased the fats in milk, while a diet of fat had not this effect. The albuminoids were more difficult to deal with. To lessen them, he had found in practice the best means was, if the woman were in health, to increase the amount of exercise, prefer-

ably walking in the open air. One or two miles a day was the walk required by the average woman. In the diagrams presented, containing an analysis of the milk in several cases of difficult digestion, there was usually an increase in the amount of albuminoids, sometimes up to or beyond four per cent., with or without a change in the fats, and treatment which resulted beneficially to the patient had the effect of reducing the albuminoids. He had not known an abscess to follow the use of the pump on the human breast, and exhibited a simple and efficient instrument of this kind. If one had to deal with a case in which there was very poor milk, this should first be made rich, and afterwards the constituents be altered as required. But there were cases in which, in spite of following out the rules contained in the paper, we were unable to manage the milk, and make it suitable food for the infant. Nor were there fixed limits as to the proportion of albuminoids and other ingredients that should be present. Each case must be studied by itself.

THE CHEMISTRY OF GOUT.

At the meeting of the Royal Medical and Chirurgical Society, held June 10, 1890, SIR WILLIAM ROBERTS communicated a contribution to the chemistry of gout (*Lancet*, June 14, 1890). In a paper recently read before the Society, the author adduced evidence to show that in the physiological state uric acid existed in the blood and urine exclusively as quadrurates, and that when it appeared in any other guise this was due to abnormal changes in the quadrurates. In that paper the changes were traced which the quadrurate underwent in urine, and which led up to the separation of free uric acid in gravel. In the present paper the changes were traced which the quadrurate underwent in the blood, and which led up to the deposition of sodium biurate in gout. These latter changes were intimately connected with the property possessed by the quadrurates of taking up in alkaline solutions an additional atom of base, and of being thereby converted into biurates. A knowledge of this reaction permitted a coherent view to be presented of the succession of events which culminated in a gouty paroxysm. In the normal state the uric acid, which circulated in the blood as quadrurate, was at once removed unchanged by the kidneys. But in the gouty state, either from defective kidney action or some other cause, the quadrurate lingered unduly in the blood. The detained quadrurate, circulating in a medium which was rich in sodium carbonate, was gradually transformed into sodium biurate, which was almost insoluble in blood-serum, and was, probably for that reason, difficult of removal by the kidneys. Under these new conditions sodium biurate accumulated more and more in the blood, and, when the accumulation had reached a certain point, was precipitated in the crystalline form in the joints and elsewhere, thereby determining the occurrence of a fit of the gout. This view was based on a study of the reactions of blood-serum and synovia with uric acid and the urates. In the case of blood-serum, these depended essentially on the saline ingredients, of which the sodium salts exceeded all the other salts put together in the ratio of 7 to 1. A solution of .5 per cent. sodium chloride and .2 per cent. sodium carbonate was a fairly exact imitation of blood-serum in so far as its saline ingredients were concerned. And it was found experimentally that such a solution behaved with uric acid and the urates in the same manner as blood-serum itself, and in the same manner as a solution composed of all the salines of the serum in their due proportion. A solution was, therefore, prepared containing .5 per cent. of chloride of sodium and .2 per cent. of carbonate of sodium. This was called the "standard" solution. The behavior of uric acid and the urates with this solution was studied in detail, under varying conditions of time and temperature, and with varying modifications of its composition. The results thus obtained were then collated with those obtained with blood-serum in similar circumstances, and with parallel modification of composition. The results were considered under the following headings: As to the solubility of sodium biurate in the standard solution and its modifications, and in blood-serum, it was found that it dissolved in water at 100° F., in the proportion of 1 in 1100; but was almost insoluble in the standard solution and in blood-serum, and no addition made thereto, of potassium, lithium, or magnesium salts, whether alkaline or neutral, made the slightest difference. The solvent power of the standard was found to depend exclusively on the sum of sodium salts contained in it,—the nearer it approached to pure water the higher became its power of dissolving sodium biurate, and *vice versa*. The degrees of alkalescence had not the least influence. The

solubility of gouty deposits in serum was tested directly. Gouty articulations, encrusted with uratic deposits, were suspended in a large body of blood-serum; but the deposits remained unchanged even after immersion for many months. As to the behavior of uric acid with the standard solution and with blood-serum and synovia, uric acid was taken up freely by these media as a quadrurate; but after a certain pause—a few hours or a few days—it was again precipitated, often somewhat suddenly, in the form of crystalline needles of sodium biurate, exactly resembling those found in gouty deposits. This remarkable reaction was held to be analogous to the phenomena of the gouty paroxysm. In gout it was assumed that the blood became increasingly charged with uric acid, until, after a certain period of incubation, sudden precipitation of sodium biurate occurred, and the "fit of the gout" was declared. Then followed a process of recovery, with restoration of the blood to a purer state. In the artificial counterfeit a similar succession of events was observed: Impregnation of the medium with sodium quadrurate; a period of incubation, during which the quadrurate passed into biurate; somewhat sudden precipitation of sodium biurate; and, lastly, restoration of the medium to comparative purity. In studying this process three stages were distinguished: (*a*) Taking up of uric acid as quadrurate, or solution; (*b*) gradual conversion of quadrurate into biurate, or maturation; (*c*) deposition of the biurate in the crystalline form, or precipitation. The following results were arrived at as to the conditions which hastened or retarded the processes which culminated in the precipitation of sodium biurate: 1. Precipitation occurred earlier in synovia than in blood-serum. 2. Increased alkalescence of the media favored the stage of solution, but did not retard the stages of maturation and precipitation. 3. The addition of salts of sodium hastened maturation and precipitation. 4. The addition of salts of potassium, lithium, or magnesium had no effect either way, except potassium chloride, which appeared to retard maturation. 5. Maturation was hastened, and precipitation occurred much earlier at 100° F. than at the temperature of the room. 6. No circumstance exercised so decisive an influence on the speed of maturation, and on the time of advent and copiousness of precipitation, as the proportion of uric acid in solution. If the proportion of uric acid in solution was 1 in 2500, or over, there was observed in the middle period of maturation, on the second or third day, a copious critical precipitation; but if the proportion was 1 in 4000, or under, the precipitation was throughout gradual and scanty, and postponed to the twelfth or fourteenth day.

Dr. George Harley said that the author had dealt with the biurates in a manner which had thrown a considerable light on the subject. Sir Alfred Garrod was the first to point out that gout was due to excess of uric acid in the blood, and he also showed that the acute paroxysm was due to the deposition of uric acid crystals in the cartilages. The deposits had been looked upon originally as due to the inflammation, but Garrod again had shown that the deposits themselves caused the inflammation round the joints. He held that the study of chemistry would ultimately lead to a true pathology, and the chemistry of gout and of alcoholism were easy to follow. The theory that gout had a neurotic origin had been revived, but those holding it seemed to ignore the fact that something must cause the neurotic state, and this was uric acid. It was as much a poison as any other poison introduced from without, and to call its results a neurosis was much the same as to regard in a similar light the delirium of atropine, the tetanus of strychnine, or the paralysis of conia. The diseases produced by germs were due to the toxic material which these germs engendered. He regarded pathological life as a discordance in the rhythm and force of physiological life. He himself suffered from gout when between eighteen and nineteen, and he had fifty-six attacks before the age of forty-two. One of his sons was attacked when aged fifteen, and another, two years younger, was also attacked when he became fifteen. His family history showed that a male had never reached the age of thirty without being attacked with gout, but the females did not suffer, though two of them had transmitted the disease to their sons. For treatment he had tried almost every remedy. Colchicum gave him such an intense headache that he could not take it; one of his sons could take it, but the other could not. He found that he derived the greatest benefit from doses of twenty or thirty grains of iodide of potassium, fifteen grains of carbonate of ammonium, and fifteen of carbonate of sodium. He knew of a patient who took quinine as a cure, and he himself could take champagne during an attack, provided it was not acid. He had used digi-

talis, and patients had got well with it, but whether because of it he could not say.

DR. HAIG was glad to find that the paper furnished chemical explanations for some of the results he had arrived at. He had shown that alkalinity increased the excretion of uric acid, while acids diminished it. Sir William Roberts had shown that alkalescence favored the stage of solution. When the acid was in solution it was probably carried to the kidneys and excreted. He took exception to the conclusion drawn from one of the experiments,—that in which a joint was suspended in blood-serum,—for this serum differed much from the liquor sanguinis, which in the body was constantly changing, varying in different men and with changes of food, etc. Further information was required as to the solubility of the various urates,—those of iron and lead were known to be insoluble,—and as to how salicylate of sodium increased the excretion of uric acid.

SIR WILLIAM ROBERTS, in reply, said he had confined himself to certain chemical results which bore on the fundamental part of the chemistry of gout, but there was something in gout other than the chemistry of the urates. It would appear that gout was in its essence a mode of nutrition, associated with an error in regard to uric acid. The gouty type of nutrition was a high one, and in transmission it was sometimes the error and not the high type which was transmitted. The chemistry of the urates was very mysterious; there were colloidal modifications of them which differed from the crystalline in their behavior. One practical outcome of the research was this, that if a patient were judged to be verging on an attack of gout he should not be allowed to take mineral waters rich in soda or lime salts.

SYNCOPE FROM CHLOROFORM.

According to the Paris correspondent of the *Medical Press and Circular* for June 11, 1890, at the Académie de Médecine M. LABORDE spoke on syncope from chloroform, experimentally produced in the laboratory, and which seemed to him to be analogous to what the surgeon witnesses on the operating-table. In certain animals, especially rabbits, M. Laborde was able easily to produce the syncope, it being sufficient to put a cork or a rag wetted with a few drops of chloroform to the nose. Almost immediately the heart of the animal stopped for several seconds, by reason of the irritant action of the vapors upon the nasal extremities of the facial nerve. If this nerve were cut, the phenomenon was never produced. If ether were used instead of chloroform, the syncope was less marked, and if chloride of methyline were substituted the phenomenon was not produced.

M. VERNEUIL said that what he affirmed some time ago he would repeat now, that experiments in the laboratory could not be of any use in aiding to avoid those accidents in man from chloroform which we meet with from time to time. The lesions met with in man, which form a contraindication to the administration of chloroform, do not, generally speaking, exist in animals. The only two patients he had lost under chloroform were both phthisical and in the second stage of the disease. M. Verneuil was, therefore, of opinion that the result of the experiments made on healthy animals could not reasonably be applied to man. He tried the different methods of administering the chloroform without deriving much advantage from them. Injecting morphine before giving the anæsthetic plunged the patient into a sleep, from which it was difficult to awaken him after the operation. As to the combination of atropine with morphine, he did not hesitate, in spite of the high esteem in which he held the physiologist who had proposed it, to pronounce it an innovation of an extremely dangerous character. Consequently he came back to the old method of using pure chloroform and the mask.

THE ACTION OF STROPHANTHUS.

DR. BUCQUOY has particularly studied the sphygmographic records of strophanthus action. He finds the strophanthus tracing characteristic: the ascent of the curve reaches a higher level, the line of descent falls more abruptly; in short, the characters of the collapsing or aortic regurgitant pulse are reproduced. Dr. Bucquoy's observations were on all varieties of valvular disease,—mitral, bicuspid, and aortic,—and on combinations of these lesions; further, he tried the effects of the drug on a case of fibroid kidney with arterial degeneration and hypertrophied left ventricle; also on a case of emphysema with "fatigued" heart, and on a case of "tachycardia," in which the hurried action was not dependent on valvular disease. His remarks are based on fourteen cases in all; but he states that he has had, during two years of

work with strophanthus, an experience of several hundred cases. The indication for strophanthus is in every case ventricular incompetence. The increased force of the ventricular systole caused by the drug is accompanied by a diminution in the frequency of the pulse and by an attempt at regulation, but in many cases the pulse remained irregular. Strophanthus action is best shown in cases of aortic disease, and for the reason that an increased ventricular beat must become more manifest when the whole force of the stroke issues through the aortic opening than when, through mitral incompetence, only part of this stroke reaches the pulse; moreover, the dilatation and hypertrophy of the heart in aortic disease being greater than in mitral disease, the former condition is better adapted to show increased force of action. Does strophanthus cause contraction of the arterioles? Dr. Bucquoy, from clinical experience, holds that it does not. He further quotes experiments of Dr. Emil Delsaux, of Liége, with Roy's oncometer as bearing out this view, since the oncometer tracing did not show any variation during the administration of strophanthus. The urine curve of strophanthus action follows the pulse curve. The influence of strophanthus on blood-pressure is not discussed. In cardiac failure Dr. Bucquoy asserts that strophanthus possesses the advantages of rapidity of effect, of sustained action, and of tolerance. It is, however, generally held to be less permanent in its action than digitalis.—*British Medical Journal*, June 14, 1890.

THE EFFECTS OF DIURETICS.

Several St. Petersburg degree theses this year deal with the subject of diuretics and their effects. Dr. Alexêeff finds that digitalis increases the excretion of water by the kidneys, but lessens that by the skin, the ratio of the total quantity excreted to that absorbed not being increased, and the effect of nitrate of potassium being much the same. Both these substances, too, raise the blood-pressure. Dr. Atlasoff, who has examined the effects of diuretics on the metamorphosis of potash, soda, lime, and magnesia, finds that both digitalis and nitrate of potassium increase the metamorphosis of soda in the body and its excretion by the kidneys, its absorption being promoted by digitalis and sometimes by nitrate of potassium. Digitalis increases both the absorption and metamorphosis of potash, but nitrate of potassium, though it slightly increases the absorption, diminishes the metamorphosis. Digitalis and nitrate of potassium somewhat diminish the absorption of lime, the former increasing and the latter decreasing the metamorphosis. The excretion of magnesia by the kidneys and its metamorphosis are somewhat lessened by digitalis, but are generally increased by nitrate of potassium, its absorption being promoted by nitrate of potassium and usually retarded by digitalis. Dr. Bêlkoff finds that the metamorphosis of chlorides, phosphates, and sulphates is promoted both by digitalis and by nitrate of potassium, the former drug exerting its effects for some time after the day of its administration, but the latter having a more transient influence. Dr. Serezhnikoff finds that digitalis, when it has any effect on the nitrogenous metamorphosis, tends to increase it. It always, however, improves it qualitatively,—*i.e.*, increases the metabolism. —*Lancet*, June 14, 1890.

MERCURIAL POISONING.

The Vienna correspondent of the *Medical Press and Circular* for June 11, 1890, states that PROFESSOR HOFMANN has opened up a question in medicine that has recently brought to the fore a good deal of talent from the practical and theoretical domains of medicine. Briefly stated, the case arose out of the sudden death of a woman after the treatment with Plencki's solution, which contains sublimate, alum, camphor, lead, spirit of wine, and acetate of vinegar (?) in equal parts. Hofmann holds that the death was caused by the absorption of the sublimate. Professor Kaposi thinks the mercury had nothing to do with the cause of death, but rather thinks the camphor is to blame. Dr. S. Ehrmann characterizes Plencki's solution as a "baroque compounding of substances, of which little can be said and seemingly little is known." The mixture is sometimes employed as an antisyphilide, sometimes as a cutaneous irritant, and at other times for anything. It is a mixture whose ingredients are held in suspension by shaking, but when allowed to stand a dense deposit is formed, which is frequently the part used as the fluid surface is poured off. This makes the application difficult to analyze. No doubt there is a large portion of the sublimate in solution which is thrown away as inoperative, and which cannot enter into the calculation of

poisoning by absorption. The deposit ingredients will be composed of the carbonate of lead, with a small quantity of the acetate, alum, which is insoluble in spirits with 1 part of sublimate, which will be the nearest computation, as sublimate is soluble in 3 parts of spirits or 16 of water. Dr. Ehrmann thinks there is still enough of the mercury left to produce the eschar found on Hofmann's patient. But the defence of Plencki's solution is that the sediment is taken, which soon dries and lies like a crystal applied to the part. Dr. Ehrmann combats this defence with an experiment on the foot of a patient where the skin is thick and obtains a similar eschar. He admits, however, that the same experiment will not apply to a condylomata on the healthy skin, because the condylomata are always raised a few millimetres above the vein-trunks, and thus make it more difficult of application, but if the surrounding healthy skin be not protected, as assumed by Hofmann, it is quite compatible with absorption and vesication of the part.

Dr. Ehrmann relates a similar case of a woman, aged 35, two months after a confinement, where a similar occurrence took place, but life was preserved. He thinks with Professor Hofmann that such an irrational mixture should be deleted from our text-books.

Reviews.

THE CLINICAL USE OF PRISMS AND THE DECENTRING OF LENSES. By Earnest B. Maddox, M.B., late Syme Surgical Fellow, Edinburgh.
Edinburgh: J. Wright.

We have read this brief treatise with much pleasure and profit. It comes at a most opportune time, since the attention of ophthalmic surgeons is once more directed to the clinical importance of a careful study of the anomalies of the ocular muscles. Those who have hitherto paid but little attention to this difficult and aggravating chapter in ophthalmology, will find much satisfaction in the perusal of this little book; there are but one hundred and thirteen pages.

"Mathematical formulæ," the author states in his preface, "have been suppressed, or relegated to foot-notes," so that a rusty mathematician need not approach the book with any feeling of dread. The geometrical and optical properties of prisms and decentred lenses, and a very satisfactory outline of the most important clinical applications of prismatic spectacles, have been given briefly but clearly. Many students, approaching the subject for the first time, will, doubtless, wish that many points had been treated with more fulness of detail, but to busy men, who are more or less familiar with the subject, this presents no objection.

It gives us pleasure to commend the book to our ophthalmic colleagues. S. D. R.

ARBEITEN DES PHARMAKOLOGISCHEN INSTITUTES ZU DORPAT. Herausgegeben von Professor R. Kobert, Kaiserlich. Russischem. Staatsrath. Parts III. and IV.
Stuttgart: Verlag von Ferdinand Enke, 1889, 1890.

Our readers will remember that some time ago we laid before them a review or notice of the first two parts of Kobert's "Arbeiten des Pharmakologischen Institutes zu Dorpat." It gives us great pleasure to call attention to-day to Parts III. and IV. of the same work, one of them having the date of 1889, and the other that of the present year. Part III. is occupied by two long, elaborate, experimental papers, respectively devoted to the consideration of solvine and ricin. Mr. Ernest Kiwull, of Riga, discusses the so-called solvines, in the course of fifty-eight pages, and comes to the conclusion that, pharmacologically and toxicologically, as well as in their physical relations, these substances resemble the saponin bodies, and that Professor Kobert was right when he warned against their use as a vehicle for the application of medicinal substances to the skin. Possibly some of our readers are wondering what "solvine" is. Solvine is not one thing, but various things, the name being used for substances which are produced by the influence of concentrated sulphuric acid upon various fatty matters, or even free-fatty acids. Most important appears to be that solvine which is known in the trade as the "Turkey red oil" (on account of its connection with the color known as Turkey red), which has been especially investigated by the Swiss chemist, Müller-Jacobs.

Hermann Stillmark, of Reval, finds ricin, the poisonous substance contained in the castor-oil bean, and in various other euphorbiaceous seeds, to be an albuminous substance, a so-called phytalbumose which belongs to the group of unformed ferments, and has no relation with glucosides, hydracids, or alkaloids. The action of ricin upon the blood has been found by Stillmark to be very pronounced; in ordinary and defibrinated blood it produced a coagulation of the red blood-corpuscles and a delay in the throwing out of

the fibrin. The coagulation of the blood-corpuscles is made still more remarkable by the fact that the ricin has no coagulating properties upon myosin, or albumen of the egg. Upon a frog's heart the poison had no influence, nor did it seem to affect the isolated nerve-trunks. Indeed, the chief influence which it exerts seems to be upon the intestinal mucous membrane, the whole gastro-intestinal tract, but especially the small intestine, being thrown by it into a state of intense inflammation. One hundred and twenty-eight cases of poisoning in man, with eight deaths, have been collected by the author, who further calls attention to the fact that the chemist has at present no means of detecting in the body the presence of this substance, a substance which is as poisonous as arsenic, and can readily be obtained in quantity from the waste products of castor-oil factories.

The fourth brochure contains a short and beautifully-illustrated article by Abraham Grünfeld, in seventy closely-printed pages of sufficiently difficult German, upon the gangrene produced in the comb of the chicken by ergot. He finds that the fundamental change is a very evident hyaline degeneration of the arteriole walls.

Ernst von Hirschheydt ("Mit-Zusätzen des Herausgebers") discourses concerning the crotonic acid of Buchheim, finding, apparently to his surprise, that croton oil seems to have very little influence in producing diarrhœa in the lower animals. This is in accord with the experiments which we ourselves made some time in the early part of this present century, before the snows of winter had cooled the ardor of a too active brain, upon elaterium. Over and over again we have seen enormous doses fail to purge dogs, even although sufficient to cause death in some way to us unknown.

Georg Jukna, of Kurland, wherever that may be, has offered up guinea-pigs, rabbits, dogs, rats, doves, cats, in a manner shocking to the nerves of Anglo-Saxon antivivisectionists, in order to determine what may be the physiological action of the substance known as condurangin, which by chemical tortures has been torn from the bark of the condurango, about as useless a drug as ever drew gold from the pockets of men and women doomed to die, but deluded by false hopes.

Condurangin, according to Jukna, contains at least two glucosides, one of which is scarcely at all poisonous, and the other a strong poison. On the isolated heart of the frog it has no action, nor did the drug, in the experiments of Jukna, exert any influence upon the blood-pressure in warm-blooded animals, so that it cannot be considered a heart or blood-vessel poison. The convulsions which it produced in the frog were found to be cerebral, as when the spinal cord was divided they did not occur below the point of section. Vomiting, which was present in some instances, was believed to be due to an influence exerted upon the nerve-centres. Experiments made upon the peripheral motor apparatus indicated that the drug had some influence, in first increasing the electro-insensibility of the nerves or muscles, and finally lessening it. The intestinal canal seemed to be very little affected by condurangin, peristalsis not being increased, and only some hyperæmia of the mucous membrane being found after death.

Correspondence.

BERLIN.

(From our Special Correspondent.)

The nearer the season approaches in which the physicians of Berlin will have the pleasure of greeting within the walls of their capital their numerous friendly colleagues, the more is the whole interest of the medical fraternity of the city, and, indeed, of all Germany, concentrated upon the great National and International Convention, with the view towards making this Congress in every respect worthy of a lasting place in the memory of its participants. Berlin has never before held at home an international world's exposition that was more important, nor, in fact, contributed elsewhere towards the management of greater international undertakings. At all events, there will be held here in the middle of next month a great international convention, for which the grandest preparations are being made, and which bids fair to be more important than any previous one here held, especially as many Americans have promised to be present. Still, the individual interests of these gentlemen may be widely different from that of therapeutics, as the assembly is to bring together representatives from the whole world. Moreover, smaller international conventions have been and still are often held in Berlin, the terms *great* and *small* referring to their size rather than to their influence. Still, as the preceding international conventions that have laid claim to greater physical

extent than this one have been few in number, and as this Congress will exert a greater influence, it is, therefore, plain that it is destined to arouse a greater interest, not only among the members of the profession but in the public generally, and, at all events, to be of more importance than any similar one previously held here.

In view of the fact that it has been announced that the wives of many of the members will accompany their husbands hither, the practical and hospitable wives of some of the most influential physicians of our city have united in making preparations for the reception of these ladies, and have passed resolutions to receive them into their families, especially during the time of the Conference, when their husbands will be engaged in the consideration of deep and subtle questions; to show them, moreover, the objects of interest in Berlin, and thus to render their short visit as useful and pleasant as possible.

Similar preparations have also been made for the male visiting members. To these latter the pleasure-resorts of the city of Berlin will not be so entertaining as the places connected with the history of medicine in the German capital, and therefore every pains will be taken to render them accessible. Each member will receive here at the opening of the Congress, through "Das Medicinische Berlin," a gratuitous copy of a short but complete guide-book, prepared under the auspices of the Organization Committee. Moreover, the guide-book will be translated into the three current languages of the Congress,—viz., German, English, and French,—and contains a map of Berlin, upon which are plainly indicated the medical, sanitary, and hygienic conveniences, as well as the hotels and squares of the various sections. The perfect and peculiar arrangement of the text renders it possible to locate immediately any important public building. As the shape and size of the guide-book enables it to be carried in the pocket, it will serve to introduce its possessor, so that the members of the Congress need not purchase any other *vade-mecum*, different costly styles of which are being prepared by other parties according to the older methods. Still, as the work above contains very short notices, and, of course, mostly those referring to convents and hospitals, it will be remembered that every one who is more deeply interested in this subject can acquire more extended information about it by referring to the civil and municipal works, that will also be furnished by the authorities to the members of the Congress.

There will meet at Berlin at that time also another assembly,—the International Congress of Cremationists. With this object in view, there have already been procured numerous contributions, selected in part from valuable collections. Members from all parts of the world, as well as many physicians, have arrived. The committee of delegation, under the name of the Cremation Union, will contribute its part to other interesting subjects, as well as towards the Medical Congress, which will be in session at that time. The ashes of a man cremated in Gotha sixty-two years since, as well as those of a girl burned nineteen years ago, will be presented. Moreover, urns of metal, serpentine, and marble, carvings, and plain pieces of crematories, as well as copies and old articles from the Union Library, will be on exhibition.

The sanitary condition of Berlin is to be noticed as being relatively more favorable than heretofore. Of the previous diseases here present, only measles is to be mentioned. This may be still considered epidemic, and causes relatively a large number of deaths. Over three hundred cases are announced weekly. Some other diseases—cases of which require to be officially reported by the attending physician, such as small-pox, scurvy, diphtheria, puerperal, typhus, and typhoid fevers, cholera, and spinal meningitis—are present, but to a very limited extent. Only scurvy prevails to any degree, and more cases of diphtheria are found than should be. Of course, sporadic cases of the other diseases, with the exception of small-pox, cholera, spinal meningitis, and typhus fever, are always to be found in so large a city as Berlin; but still there is to be noticed rather more than a usual number of cases of these three latter affections.

Of the various recently-recommended medicines, I shall to-day mention the therapeusis of only two. First, in regard to the so-called orexin, recommended by Professor Penzoldt for loss of appetite. Out of five cases of this disease in which this remedy was exhibited, in four cases its use was followed by no appreciable effect, while in the fifth its administration *seemed* to produce a slight general improvement. Although the observations made from these five cases are not conclusive, yet it was really wonderful that the effect was negative in all of these invalids. In a medical journal of Vienna there was recently published an article by

which the value of orexin as a stomachic was rendered very doubtful, and, moreover, I myself, in the exhibition of the remedy for loss of appetite from various reasons, have observed no benefit following its use. Possibly a more extended trial may discover other more suitable fields of usefulness for the new medicine.

A brighter future seems about to dawn for another preparation that was recently recommended by Professor Stilling, of Strasburg. He has examined the germicidal qualities in the coloring-matters in aniline, and discovered that violet prevents infection and lessens already-existing suppuration, provided it be thoroughly applied over the infected area. In solutions of from 1 : 2000 to 1 : 1000 it is fatal to all known forms of bacteria. Moreover, as the violet of methyline is relatively not poisonous, this quality might enable it to be used advantageously in diseases of the eye, such as ulceration of the cornea, conjunctivitis, and blepharitis. It would also be the preparation to be used in general surgery, cutaneous diseases, and syphilis. Cœrulean tyoktanin, from the violet of methylene, discovered by E. Merck, in Darmstadt, is suitable for general practice, as golden-hued pyoktanin is for ophthalmic diseases. Before its use the surgical instruments are placed for a while in a weak solution of from 1 : 10,000 to 1 : 20,000. After the operation the wound is washed with a stronger solution,—say, 1 : 2000 to 1 : 5000,—the parts united with a silk ligature saturated with the solution of methyline, and the wound dressed with lint and cotton, likewise disinfected.

A physician in Frankfort, in 1887, tried methylviolet in diseases of the eyes, but came to conclusions exactly the opposite to those given above. In a surgical clinic in Berlin extended observations are being made with tyoktanin, in order to discover its instantaneous effects, the results of which will be given in my next letter. I may mention the effects that I have seen following its use as being simply wonderful. In wounds of the cranium, that were previously suppurating very much, there was found no signs of the pus saturating the bandage after it had been applied eight days. No odor was perceptible, and the irritation of the surrounding skin—as is so frequently seen from the use of iodoform, and which lessens its practical value in medicine—was not observed. The epidermis could be removed in large flakes, and underneath it was found another healthy epidermis. At all events, further examination in regard to the effect of these preparations is simply imperative.

BERLIN, June 15, 1890.

LONDON.

(From our Special Correspondent.)

An interesting communication was made to the Royal Society by Dr. Klein on the 22d of May relating to the etiology of diphtheria. The research will appear in full in the Report of the Local Government Board for 1889–90. From these separate and independent sources accurate information was obtained as to a disease of cats occurring at the same time as outbreaks of diphtheria. This disease killed the animals, and appeared to consist chiefly of an inflammation of the lungs,—a kind of broncho-pneumonia. This was the fundamental fact which led Dr. Klein to investigate the subject, and the questions to which an answer was attempted to be given were as follows: Is this disease of the cats the same disease as diphtheria in the human subject? Is it caused by the same pathogenic micro-organisms? The second question was naturally investigated first, as its solution would lead to the answering of the first. Löffler, who first carefully separated the organisms in human diphtheria, described two bacilli, and although he himself was extremely doubtful whether one or either of these bacilli was the *fons et origo* of the disease, yet other and later observers, working on his line, showed that the organisms separated undoubtedly possessed pathogenic qualities, and produced symptoms closely resembling human diphtheria and its sequelæ,—such as paralysis. Great doubt, however, existed as to which of these two organisms was the pathogenic one, and this doubt seems to have been dispelled by Klein's work. He finds that the two kinds of bacilli may be separated by growing them on gelatin. The pathogenic organism grows on this culture medium in little mounds, which are characteristically shaped, since they are conical and ridged, like a pile of smaller coins placed on a larger one. The other bacillus, according to Klein, does not possess pathogenic qualities. The bacillus which grows on gelatin when inoculated into mice produces a rapid death in twenty-four to thirty-six hours. In cats the introduction of this organism into the body produces a local lesion, which tends rapidly to become necrotic. The animal, if it recovers from the first effects of the inocu-

lation, then develops lung symptoms and dies. The post-mortem appearances presented by these animals who die after five or six days are very characteristic. There is the local lesion, in which there is seen inflammatory œdema, with more or less necrosis of the surrounding tissues; the lungs are solidified in parts, and show the characteristic morbid appearances of broncho-pneumonia, and the kidneys are enlarged and show an extreme degree of fatty degeneration. If the organisms are subcutaneously inoculated, the bacilli are only found in the local lesion and not in the other lesions—lungs and kidneys—of the disease nor in the blood. If the inoculation be through the trachea into its cavity, no false membrane is produced, but the animal dies of broncho-pneumonia, and in the microscopical sections of the lungs the organisms are found. These results in cats correspond to what Löffler and others found in human diphtheria, in which the organisms are found only in the false membrane and near its surface, and not in the blood or in any other part of the body. The conclusion is, naturally, that the general symptoms of diphtheria are due to a chemical poison manufactured by the bacillus in the false membrane or other local lesion. The disease and lesions just described as caused by the bacillus, separated from human diphtheritic membrane, is the same as that which is found in cats who become ill with a peculiar disease when diphtheria is epidemic; and, moreover, from this natural disease in cats, the same bacillus was found and separated as in human diphtheria. There seems no reasonable doubt, therefore, of the identity of the two diseases, an identity which is well confirmed by the remarkable kidney lesion observed in the cats.

Important, however, as this connection of the domestic cat with the etiology of diphtheria, the experiments on the action of the diphtheria bacillus on cows are, if anything, more important. Many sanitary officers who have investigated epidemics of diphtheria have come to the conclusion that milk may be a vehicle for the transmission of the poison. Whether the milk derived its infection of diphtheria from the cow itself or from a case of human diphtheria is, on the face of it, an all-important question. Dr. Klein inoculated two cows with the diphtheric bacillus, and found that they exhibited symptoms practically similar to those already noticed as occurring in cats,—viz., a local œdema and necrosis of the soft tissues, with a subsequent broncho-pneumonia and fatty degeneration of the cortex of the kidneys. The cows, however, exhibited neither symptom. Inflammatory vesicles developed on the teats and udder of the animals; these rapidly became pustular and scabbed over. These vesicles, therefore, resembled cow-pox, and indicate, what was often suspected, that there are probably several distinct diseases included under the term cow-pox. However this may be, and it is a matter for future research, the fact had, previously to Klein's researches, been noticed that in these epidemics of diphtheria, where the source of infection was traced to the milk-supply, an eruption on the udder like cow-pox had been noticed. The vesicles and ulcers contain the diphtheritic bacillus: does the milk also contain it? In the cows experimented upon by Dr. Klein, the milk was withdrawn with all antiseptic precautions, care being taken that the vesicles, etc., were not touched. The milk as obtained was found to contain the same diphtheritic bacillus that had been subcutaneously injected into the animal. We have here, then, a possible explanation of the mode by which a disease of the cow can convey to the milk the poison of diphtheria. That the milk so obtained in Klein's experiments was infective was shown in a curious way. The attendant was told to throw the milk away, but, instead of doing this, he gave it to two cats, which were then in the laboratory (Brown Institution). Both these cats died, and not only so, but they infected over a dozen cats which were in the same room with them, and these cats had the typical diphtheria of the cat. This natural experiment is naturally very important; but a crucial test will have to be applied by feeding healthy cats directly with the milk derived from a cow suffering from diphtheria, and seeing whether they succumb to the disease.

These researches are an important contribution to the etiology of diphtheria, and will, no doubt, open up the way to the extended sanitary reform of dairies.

Notes and Queries.

THE LAST OF OREXIN.

Orexin may now in all probability be relegated to the obscurity which it seems to deserve. We have already published the testimony of several independent observers who have failed utterly in obtaining any ac-

tion from this substance, which is claimed to possess remarkable powers as a stimulant to the appetite. Still another paper, pointing in the same direction, has been published by DR. GEORGE MÜLLER in the *Therapeutische Monatshefte* for June, 1890.

He has tested its use in five different cases, in all of which orexin proved to be absolutely inert. Of course these five cases in themselves would not be sufficient to detract from the reputation of an established remedy, but when they are taken in conjunction with the number of other cases which have been reported, it seems that further studies with this substance are uncalled for.

PEPTONES OF MEAT.

Meat that has gone through the process of complete peptonization is now recognized as a valuable agent in cases of weakness and debilitated digestion. The value of such a preparation depends, of course, upon the presence of well-defined bodies, chief of which are peptone, albumose, and gelatin, along with other soluble and predigested albuminoids. A method, which has for its object the determination of the amount of these constituents, has recently been communicated to the *Revue Internationale des Falsifications*, Part X., p. 169, by M. ALPHONSE DENAEYER. The difficulty hitherto, it appears, has been to isolate the gelatin-chondrine, as the author calls it. The albuminoids are more or less closely allied, and but few reagents precipitate one apart from the other. The separation, however, may now be brought about, so the author claims, easily and with comparative rapidity by adopting the following briefly-sketched plan: 1. Precipitation of the peptone of meat with the double iodide of mercury and potassium, which throws down only the albumose; the filtrate after concentration is then treated with excess of saturated solution of ammonium sulphate, and the mixture gradually brought to boiling heat. This results in the coagulation of the gelatin upon the walls of the vessel containing it. Rapid washing with cold water removes the small quantity of entangled iodide, but still leaves a little sulphate. It is then dried and weighed, and subsequently dissolved in hot water, and the ammonium sulphate determined by means of standard barium chloride (normal), and deducted from the first weight found. This is apparently the novel feature of the method. 2. Precipitation with saturated ammonium sulphate, which gives albumose and gelatin. Both are thrown upon a tared filter, washed with the sulphate, dried, and weighed. The adhering sulphate is determined as in the first case, and deducted. 3. Preliminary treatment with 95° alcohol to take up creatine, creatinine, urea, sarcolactic acid, etc., the amount of which may be got at by filtering the alcohol, evaporating, and weighing the residue. The portion insoluble in spirit is dissolved in water and precipitated with phospho-tungstic acid, which throws down albumose, peptone, and gelatin. These are dried and weighed on a tared filter; the ash is afterwards determined and the weight deducted. As will be seen at a glance from these data, the amount of each constituent may be readily calculated. Practice will show how far the method may be depended upon; it certainly appears to be convenient in operation, and the author has obtained results agreeing closely with those obtained from the estimation of the nitrogen. Appended are some of the results obtained, which give also an idea of the relative composition of different commercial preparations:

Designation.	Peptone of purified meat albumen.	Peptone of egg albumen.	Peptone direct from meat.
Peptone	37.675	34.700	25.857
Albumose	31.300	53.350	15.964
Gelatin	None.	None.	9.826
Definite compounds	5.525	5.930	29.972
Mineral salts	8.285	1.025	18.386
Water	10.250	4.625	None.
Insoluble	9.965	3.980	None.

—*Lancet*, May 31, 1890.

POISONOUS AND DEFENSIVE ALBUMOSES.

The very interesting paper by Mr. E. H. Hankin, which was published in the *Journal* of October 12, 1889, will be remembered by our readers; he succeeded in rendering mice and rabbits immune to anthrax by treating them with an albumose obtained from cultivations of the anthrax bacillus.

Dr. Sidney Martin, one of the research scholars of the British Medical Association, communicated to the Royal Society, on May 22, the results of a research commenced over a year ago, at the instance of the medical officer to the Local Government Board. Dr. Martin's research has been of a comprehen-

sive and thorough character; he has used as the fluid in which to grow the bacillus a solution of pure alkali-albumen made from serum, with the addition of mineral salts having the composition of the salts of the serum. After being allowed to grow for ten days or a fortnight, the bacilli were filtered off through porcelain, and the fluid filtrate chemically examined; he found it to contain leucin and tyrosin, an alkaloid, and three proteids, — namely, proto- and deutero-albumose, and a trace of peptone. The alkaloid yields a strongly alkaline solution, and is a powerful base, readily forming salts with acids; its solutions give reactions with certain of the ordinary tests for alkaloids,—namely, precipitates with phospho-tungstic, phospho-molybdic, and phospho-antimonic acids, and with platinic chloride; the sulphate crystallizes in small needles or prisms, the oxalate in long branching needles or flat plates. The two albumoses are strongly alkaline, and do not lose this quality when treated with absolute alcohol, benzine, chloroform, or ether, nor when dialyzed for long periods. Their alkalinity, therefore, appears to be an inherent quality, and Dr. Martin suggests that this may explain their toxic properties, the alkaloid being in a nascent condition in the albumose molecule. The bacillus he supposes forms the alkaloid from the albumose, while it is possible that the living tissues have a similar action when the albumose is introduced into a living animal, for subcutaneous injection of the albumoses produces the same effects as subcutaneous injection of the alkaloid, only less rapidly. If a mouse is injected with the anthrax alkaloid it becomes ill immediately, grows more and more sluggish, and finally comatose; about one two-hundredth of the body-weight was found to be a fatal dose, killing in from two to three hours.

The lesions found after death were enormous local subcutaneous œdema, with congestion, and sometimes thrombosis of the small veins; the spleen was congested, and in some cases much enlarged; occasionally peritoneal effusion was present. The fatal dose of the albumoses was from twice to three times that of the alkaloid, and the animal survived for twenty-four hours or longer. The symptoms were the same: sluggishness succeeded by profound coma; there was local œdema at the point of inoculation, and in some cases enlargement of the spleen. Cultivation experiments made from the spleen showed that no organisms were present. Smaller doses produced a local subcutaneous œdema, with some sluggishness, ending in recovery. It ought to be added that boiling for a short time diminished, without completely destroying, the toxicity of the albumoses.

At the same meeting of the Royal Society, Mr. E. H. Hankin, who also receives a grant from the Scientific Grants Committee of the British Medical Association, reported the results of some extremely interesting and suggestive experiments which he has made, in the Pathological Laboratory of Cambridge University, on a proteid body extracted from the spleen and lymphatic glands of cats. He found that this body—a globulin—has the power of killing certain pathogenic bacteria. The globulin appears to be identical with Halliburton's cell globulin β, a substance which that author believes to be fibrin ferment. This globulin can be precipitated with alcohol, and dried without losing its germicidal characters. The method employed was the same as that used by Buchner when testing the bacteria-killing power of blood serum. Mr. Hankin's results appear to have a great theoretical interest, as shown by the conclusions which he draws from them, which are as follows: 1. That Halliburton's cell globulin β possesses a bacteria-killing power. 2. That this power appears to distinguish it from fibrin ferment. 3. That this bacteria killing power is of the same nature as that possessed by blood serum, as described by Buchner, Nissen, and Nuttall. 4. That this power of the serum is probably due to the same or some allied substance. 5. That inasmuch as it is possible to obtain from cells that are or can become phagocytes a substance having bacteria-killing powers, we may suppose that phagocytes cannot only kill microbes that they have ingested, but also do this by breaking down and liberating their contents.

It is obvious that this discovery throws a new light on Metschnikoff's phagocyte theory, and points to an explanation of the *rationale* of pus formation. Apparently we are dealing with a natural antiseptic,—a substance produced by the organism to protect itself against microbes, and the question arises whether its administration can have an effect in modifying the course of the disease. Mr. Hankin's results in this direction, though entirely of a preliminary nature, are not without interest. Though in some cases an injection of cell globulin after anthrax inoculation produced no noticeable effect, in other cases the life of the animal was prolonged, and on its death the bacilli showed

different signs of degeneration, and many of them were included in phagocytes.

Mr. Hankin's work seems to indicate that in the conflict between the organism and the microbe both parties choose their weapons from the same armory,—namely, that of poisonous proteids.—*British Medical Journal*, May 31, 1890.

ANEMONINE.

According to the Paris correspondent of *The British Medical Journal*, for May 31, 1890, at the meeting of the Société Médicale des Hôpitaux, Dr. Bovet spoke of thirty-four cases of uterine affections that he had treated with anemonine, and has observed that in serious cases it acts as an energetic analgesic agent; in simple cases, such as difficult menstruation with or without leucorrhœa, the menstrual flow was induced at regular periods unaccompanied by pain. MM. Baz and Dormant have cured blennorrhagic orchitis with the same substance.

A CASE OF BILIO-BRONCHIAL FISTULA.

In *La Médecine Moderne*, May 15, 1890, Dr. Colvée describes a remarkable case of a man over 50 years of age, with a good constitution, and without any hereditary pathological antecedents, who was the subject of a fistula of the bile-ducts communicating with the bronchi.

In the previous history which is given of the case nothing very striking appears, he having in his youth suffered from hemorrhoids, in 1868 gastric fever, which was somewhat complicated by obstinate bleeding from his hemorrhoids, and congestion of the liver and spleen. He appears to have been very much prostrated by this attack, but in a few months entirely recovered, and since then has not been troubled by hemorrhoids. In 1875 he had an attack of pleurisy on the left side, and in 1885 intermittent fever.

The attack which is at present under notice commenced in April of the preceding year with bronchial catarrh, the expectorations after a short time being occasionally stained yellow, and although the cough diminished and the fever disappeared, yet the yellow expectoration occurred from time to time. The appetite and digestive functions were not interfered with, and the patient was able to continue his professional occupation.

On the 7th of October, during the night, he was suddenly attacked with acute pain in the right hypochondriac region, extending to the epigastrium, with abundant bilious vomiting and fever, which lasted for several days, cough and expectoration augmenting considerably, the expectoration being a quart or a quart and a half a day. At the time of its expectoration the sputum was yellow, or orange-colored; but, after a few hours' contact with the air, the superficial layers became greenish and the deeper layers were of a reddish tint. The patient complained of the bitterness of the sputum, and chemical examination showed the presence of bile. Occasionally the patient expectorated little black bodies, varying in size from that of a grain of sand to that of a small pea. Sometimes they were soft and readily crushed, and possessed a red- or orange-colored interior. These little calculi under Gmelin's test were found to be biliary calculi, composed principally of bilirubin. Under the Pettenkofer test the sputa showed the presence of the biliary acids.

Occasionally the patient eliminated by coughing true biliary calculi considerably larger in size than a pea, but they unfortunately were not preserved.

The first attack of this character lasted for eight or ten days, and the fever and gastric distress then gradually diminished and the expectoration was reduced to the rejection of a little yellowish sputa, although symptoms of chronic bronchitis persisted for several months.

The fæces during this time were almost absolutely colorless, while the urine was charged with urates and uric acid, but was free from any biliary elements. During the height of the attack expectoration was almost constant, and when improvement commenced it then diminished in intensity, and the fæces now commenced to regain their normal color. The cough appeared especially to be influenced by position, since a recumbent position on the back or on the right side was sure to produce extremely violent coughing. The left decubitus was better supported, although the erect position and leaning forward produced the greatest freedom from coughing.

Pressure on the right hypochondriac region also produced coughing, and this locality was also the seat of dull pain. The liver retained its normal volume, and the heart and left lung appeared normal, although there were signs of chronic bronchitis at the base of the right lung.

The above case is certainly a great curiosity in medicine, since, as far as we know, but three cases have been previously reported,—those of Cayley, Labulbène, and Dreschfeld.

ANTIPYRIN AND CARBOLIC ACID.

In a paper recently published by Messrs. Millard and Stark, carbolic acid was mentioned as being incompatible with antipyrin. This is confirmed by M. TARDY (*Repertoire*, May 10, p. 209), who says that a solution of carbolic acid added, separated after some hours into two layers. The upper layer, which was limpid, having been decanted, was found to have only the taste of antipyrin, and did not contain any carbolic acid. It had a piquant taste, a faint rose color, a slight odor of phenol, and a specific gravity of 1.13; further, it was neutral to reagents, insoluble in water, and soluble in alcohol and in ether.—*Pharmaceutical Journal and Transactions*, May 31, 1890.

ACETIC ACID IN EPITHELIOMA.

According to the Paris correspondent of *The British Medical Journal* for May 31, 1890, at the meeting of the Société Médicale des Hôpitaux, M. Arnogan related eight cases of epithelioma of the face of sebaceous origin treated with acetic acid, with excellent results. Suppuration was arrested, and ultimately cicatrization ensued. The patient can apply the treatment, and dressings are rendered unnecessary.

THE TREATMENT OF A RED NOSE.

According to UNNA (*Lyon Médical*, June 1, 1890) redness of the nose is ordinarily due to acne rosacea, accompanied by dilatation of the blood-vessels, and is frequently caused by seborrhœa, which must be combated by ordinary means. When the case is one of simple acne rosacea, Unna recommends the internal administration of ¾ of a grain of ichthyol, and at the same time prescribes lotions of the same substance dissolved in water. At night he recommends the application of an ointment composed of zinc ointment 20 parts, rice powder 5 parts, sulphur 2 parts.

Where vascular dilatation is a prominent element of the affection, Unna advises puncture of the dilated venous trunks with Hebra's instrument, the procedure to be repeated two or three times a week.

In light cases, and as a supplementary treatment in severe cases, he advises the use of ichthyol soap, while warm water should invariably be used for washing.

THE THERAPEUTIC EMPLOYMENT OF ARMERIA VULGARIS.

The maiden pink (*Armeria vulgaris*, Willd.) enjoys considerable reputation in southern Europe as a domestic remedy, taken in the form of an infusion, 10 parts to 200, and has recently been subjected to study by DR. BRUNNER, of Buda-Pesth (*Pharmaceutische Post*, May 25, 1890) as a diuretic.

The author claims that the infusion of this remedy is of great service in the treatment of catarrhal affections of the kidneys and bladder, as well as in producing solution of renal and vesical calculi. It acts as a stimulant to the muscular tissue of the bladder and of the uterus, and is, therefore, indicated in the treatment of urinary concretions, hemorrhage of the bladder or of the uterus.

Dr. Brunner states that he has employed it with the most satisfactory result in such cases.

SALOL IN DISEASES OF THE GENITO-URINARY SYSTEM.

In the *Boston Medical and Surgical Journal*, DR. J. G. MUMFORD records several cases in which the internal administration of salol, in 10-grain doses three times a day, served as a prophylactic against catheter fever, and several consecutive cases of gonorrhœa cured by its internal administration in doses which varied from 2 to 10 grains three times a day.

SODIUM IODIDE.

At the last meeting of the medical faculty at Dorpat, DR. LABORDERIE called attention to the fact that sodium iodide occurs in commerce in three forms, containing very variable proportions of water of crystallization. The crystallized iodide contains twenty per cent., the "dried" from 7.5 to eighteen per cent., and that in scales six to ten per cent. Under these circumstances he thinks it not surprising that there should be considerable difference in the activity of medicines containing this compound, according as one or other of the varieties is used in dispensing, and he therefore recommends that only the crystallized iodide should be used, its compo-

sition being constant. It may be mentioned that the form of sodium iodide official in the Codex is in cubic crystals.—*Pharmaceutical Journal and Transactions*, May 31, 1890.

CHANGES IN FACULTY.

The following changes have been made in the Faculty of the Medico-Chirurgical College of Philadelphia:

Dr. J. M. Anders transferred from Diseases of Children to Clinical Medicine; Dr. Ernest Laplace made Professor of Pathology and Clinical Surgery, and Dr. Samuel Wolfe, Professor of Physiology.

BISULPHIDE OF CARBON IN DYSENTERY.

Dr. Jakobleff reports in the *Proceedings* of a Russian provincial medical society that he has found great benefit in dysentery from the employment of bisulphide of carbon,—of course, largely diluted. The quantity given per diem was from 3 to 5 grains in half a tumbler of water or milk, with a little peppermint. First of all, however, 1 or 2 grains of calomel were administered hourly until calomel stools had been induced; and during this time enemata containing 1½ grains of sulphide of carbon in 1½ ounces of water were administered twice daily. Great improvement was produced, and frequently this was as rapid as it was marked, so that there could not be any doubt that it had been brought about by the bisulphide of carbon treatment.—*Lancet*, May 24, 1890.

THE NATURE OF "NONA."

From his observations of two cases of so-called "nona," both of which were fatal, Dr. Tranjen, of Sistova (Bulgaria), believes that the affection popularly described under that name is really infective *cerebro-spinal meningitis* (*Berliner Klinische Wochenschrift*, No. 22). Both these cases exhibited coma rather than symptoms of cerebral irritation or paralysis. So-called "nona" would then be nothing but a cerebro-spinal meningitis of abnormal type, and the occurrence of such atypical cases after epidemics of influenza and pneumonia is, Dr. Tranjen thinks, easy of explanation. Even if the view put forward by A. Kühn, that influenza is not a disease *sui generis*, but only a rudimentary or larval form of pneumonia, be not accepted, it is yet a fact that pneumonia is always largely increased during influenza times. It may be that influenza has the power of modifying micro-organisms or their soil, so that the diseases excited by it are often nearly unrecognizable. Hence cerebro-spinal meningitis, which is, in its etiology, closely allied to pneumonia, may *a priori* be expected to be, like that affection, influenced more or less by influenza.—*Lancet*, June 7, 1890.

ANTIPYRIN AND ITS INCOMPATIBLES.

Messrs. F. J. Millard and A. Campbell Stark recently reported before the Chemists' Assistants' Association of London the results of a study of the effects of combining antipyrin with all of the articles of the British Pharmacopœia at all likely to be dispensed with it, as well as other combinations with unofficinal articles. They give the following list of incompatibles as determined by their experiments:

Acid. carbolic., precipitated in strong solution.

Acid. hydrocyan. dil., yellow coloration.

Acid. nitric. dil., faint yellow coloration.

Acid. tannic., white, insoluble precipitate.

Alumen (ammonia), deep yellow coloration, fading and precipitating.

Amyl nitrite (acid), green coloration.

Arsen. iodid., precipitate.

Chloral hydras, precipitates in strong solution; no apparent action in dilute.

Cupri sulphas, solution turns green.

Decoc. cinchonæ, precipitates.

Ext. cinchon. liq., precipitates.

Ferri sulph., brownish-yellow color, deposits on standing, and solution turns red.

Glycerinum acidi carbolici, precipitates.

Glycerinum acidi tannici, precipitates.

Hydrarg. perchlor., precipitates, soluble in excess of water.

Inf. catechu conc., precipitates.

Inf. cinch. acid., precipitates.

Inf. rosæ acid., precipitates.

Inf. uvæ ursi, precipitates.

Liquor arsenii et hydrarg. iod., precipitates.

Liquor ferri perchlor., Liquor ferri pernit., Liquor ferri persulph., } blood-red coloration.

Liquor potass. permang., reduction takes place quickly.

Sodii salicylas (solid), liquefies.

Spirit. ætheris nitrosi (acid), green coloration.

Syrup. ferri iodid., reddish-brown coloration.

Tinct. catechu, precipitates.

Tinct. cinchonæ, precipitates.

Tinct. cinchon. co., precipitates.

Tinct. ferri perchlor., red coloration.

Tinct. gallæ, precipitates.

Tinct. gum rubri (*Eucalyptus kino*), precipitates.

Tinct. hamamelidis, precipitates.

Tinct. iodi, precipitates, soluble in excess of water.

Tinct. kino, precipitates.

Tinct. laricis, precipitates.

Tinct. rhei, precipitates.

Dilute Acids.—With dilute acids no apparent change takes place, as with sulphuric, hydrochloric, nitric, and phosphoric acids antipyrin forms soluble compounds (Gay and Fortuné). This is well shown by dissolving antipyrin in excess in any of the above dilute acids. The solution then gives with ferric chloride a yellow coloration (or none at all) instead of the usual blood-red coloration, one of the tests for antipyrin.

The reaction said to occur when strong nitric or sulphuric acid is added to an alcoholic solution of antipyrin, we have not been able to obtain. Another statement we are unable to entirely confirm, is regarding the behavior of antipyrin with phosphoric acid. We find that boiling concentrated phosphoric acid, to which have been added a few crystals of antipyrin, gives only a faint straw coloration, whereas it has been claimed that it immediately blackens and yields an aromatic odor. This latter reaction, however, we have been able to obtain when using phosphoric anhydride, and the aromatic odor closely resembles that of salol.

Nitrites and Nitrous Acid.—The green coloration sometimes produced when antipyrin is mixed with spirit of nitrous ether has been frequently commented on. The green coloration is due to the formation of the compound isonitroso-antipyrin, a body having the empirical formula of $C_{11}H_{11}N_3O_2$ (that is, antipyrin having an atom of hydrogen replaced by NO). By the action of the acids upon this body, a small quantity of cyanogen is produced, and it is stated that unpleasant symptoms have been traced to a mixture of antipyrin and spirit of nitrous ether. According to reporters, the compound itself is inert, and the cyanogen formed from it, by the acids of the stomach, is produced in too small a quantity to be dangerous.

Isonitroso-antipyrin is only formed in the presence of free nitrous acid ; a neutral spirit of nitrous ether may, therefore, be safely dispensed with antipyrin. But it should be remembered that ethyl nitrite is itself speedily decomposed by water, with the formation of free nitrous acid. We would, therefore, recommend that the occasional practice of prescribing the two together should be discontinued. The same remarks apply to commercial amyl nitrite.

Tinctures.—We found that no precipitation in any case took place with tinctures if a spirituous solution of antipyrin was employed, or if the salt was added to the tincture. The addition of water precipitated the antipyrin compound. In connection with the precipitation with astringent preparations, it should be borne in mind that antipyrin behaves with reagents exactly as an alkaloid, and is, therefore, precipitated by tannic acid and its congeners. The same observation applies to the astringent decoctions and infusions.

Chloral Hydrate.—The fact that chloral hydrate and antipyrin react with each other was pointed out some time ago by M. Blainville, and the reaction has since been studied by Herr Reuter.

From a number of experiments we are of opinion that this compound of antipyrin and chloral is not appreciably formed unless concentrated solutions are employed.

We conclude that the reaction is not complete in aqueous solutions, and does not appreciably take place if dilute solutions of the two bodies be employed. As the chloral-antipyrin is, according to Herr Reuter, physiologically inert, the question of its formation under the ordinary conditions likely to occur in pharmacy appears to us to be of some importance.

Mercuric Chloride.—When a solution of antipyrin is added to a solution of mercuric chloride a white precipitate occurs, soluble in excess of water. By employing concentrated solutions of the two substances, we have prepared a quantity of the compound of mercury and antipyrin. The specimen we exhibit is slightly soluble in cold water, more so in hot. It is soluble in alcohol, sparingly so, if at all, in ether, chloroform, and petroleum ether. We have been unable to crystallize it. The compound is, we believe, partially decomposed by water, the supernatant liquid from the precipitation of the compound giving at first no indication of the presence of free antipyrin (the mercuric chloride solution was purposely employed in large excess). On standing some time, however, it

gave the nitrous acid reaction characteristic of antipyrin.

The mercury still exists in the compound, even after a considerable space of time, in the mercuric state, and we have been unable to find any calomel present.

Ferric chloride produces with a solution of this compound a brick-red precipitate, soluble on heating and reprecipitated on cooling.

The most remarkable character of this body is its extremely low melting-point. This we find to be nearly 73° C. The melting-point of mercuric chloride is 265° C., while that of antipyrin is 110° C. The compound turns slightly yellow upon fusing, but appears to us otherwise to remain chemically unaltered.

Calomel.—As antipyrin seemed to us occasionally to act as an oxidizing agent, we thought it worth while to investigate its action with calomel. For this purpose the following mixtures were made and exposed to diffused sunlight for a month :

1. Calomel, 4 grammes; antipyrin, 4 grammes; intimately mixed and placed in an open vessel.

2. Calomel, 2 grammes; antipyrin, 2 grammes; hydrochloric acid, 5 cubic centimetres; and water, 50 cubic centimetres.

3. Calomel, 2 grammes; antipyrin, 2 grammes; water, 50 cubic centimetres.

Blank experiments containing the same proportions of calomel, water, and acid, and calomel and water, were made to Experiments 2 and 3.

On examination at the end of a month, No. 2 had turned distinctly yellow, the others remained unaltered in appearance. We were unable to find any mercuric chloride present in any of them.

Sodium Salicylate.—The fact that sodium salicylate and antipyrin react when in powder has been several times pointed out. No reaction appears to take place in solution.

Iodine.—When solution of iodine in iodide of potassium is added to a solution of antipyrin, a precipitate is formed, which disappears upon agitating the liquid, leaving a colorless solution, until a definite quantity of iodine is added, when the precipitate remains permanent.

A recent writer, M. Manseau, has suggested utilizing the reaction as a means of estimating the purity of a sample of antipyrin. Decinormal solution of iodine is employed, and the end of the reaction being indicated by the production of a permanent precipitate. We have examined this method, and find that the production of a permanent precipitate depends upon the degree of dilution of the antipyrin solution, and is practically valueless as an indication of the termination of the reaction.—*American Druggist*, June, 1890.

BUTYL-CHLORAL IN NEURALGIAS OF THE TRIGEMINAL.

The *Wiener Klinische Wochenschrift* says, Butyl-chloral has been found to have a specific action upon the trigeminus nerve, which may be anæsthetized by from 1 to 3 grains internally. Professor Liebreich, of Berlin, prescribes it as follows :

℞ Butyl-chloral, gr. xl to lxxv;
Alcohol rect., f℥iiss;
Glycerini, f℥v;
Aq. dest., q.s. ad f℥iv.
Sig.—2 to 4 spoonfuls at once.

—*National Druggist*, June 15, 1890.

ABUSE OF PURGATIVES.

Professor Sänger, at a meeting of a medical society at Leipsic, spoke very strongly on the abuse of purgatives. He complained that not only did the public buy immense quantities of aperient pills, draughts, and waters, but that practitioners also pandered disgracefully to the craving for instantaneous relief from constipation, so common among patients. Quack laxative medicines were advertised in every newspaper, on walls, in stations, and on the trees and rocks in romantic districts of Europe frequented by tourists. The competition in invention of a new secret purgative was very keen. In this respect, a Polish doctor was not wise in his generation. This gentleman who, according to Dr. Sänger, appeared to have no special anxiety about his patients' vermiform appendages, prescribed gravel, and boasted that he had already prescribed whole cart-loads; but a drug which anybody could scrape up in his garden could not be patented, and therefore would never gain the confidence of the public, who love mystery in purgatives as in other matters. Professor Sänger said that the abuse of these drugs caused not habitual constipation, but rather "artificial constipation." The evil was most prevalent among women with chronic pelvic diseases, real or imaginary. He ordered, in such cases, that all purgatives be discontinued. He never had bad results, even when constipation lasted for over a week. Belladonna was the

only drug he ever used when flatulence, etc., set in, and when the constipation lasted for very long. He objected to dieting, which kept up a pernicious feeling of invalidism, and, finding that the patients drank little water, he made them take several glasses of filtered water daily, when fasting; occasionally whey or buttermilk was given as a change. Fruit, brown bread, and exercise were recommended. Professor Sänger found this treatment far better than massage, visits to watering-places, enemata, and other familar means to the same end. In the long run his patients had natural actions of the bowels, and were cured of their invalidism.—*British Medical Journal*, June 7, 1890.

DIURETIC EFFECTS OF GRAPES.

According to the Paris correspondent of the *Lancet* (June 21, 1890), Dr. Pecholier, of Montpellier, has published a note on the diuretic effects of grapes, which would appear to confirm the diuretic action of glucose recently brought to notice. In two cases—one a patient with cardiac disease and the other the subject of hepatic cirrhosis with ascites—a "grape-cure" was undertaken with the best results. In the former patient, notably, five pounds of grapes were daily ingested, in three parts, and the diuresis produced was much more considerable than with milk, digitalis, or iodide of potassium. This effect can only be attributed to the sugar of the juice of the grape, the other parts of the fruit having been rejected.

SUBSTITUTES FOR IODOFORM.

By the action of iodine on members of the phenol series in presence of an alkali, a number of homologous compounds can be formed, all of which have much the same therapeutical properties as iodoform. One of these, the iodide of diiodophenol ($C_6H_3I_2OI$), has been proposed by Messinger and Nortmann, under the name of "annidaline," as an efficacious and inodorous substitute for iodoform. It is formed by heating together solutions of iodine in iodide of potassium, and of phenol in caustic potash, in the proportion of 8 atoms of iodine to 1 molecule of phenol and 4 of potassic hydrate. There resides a dark-red amorphous precipitate, which, when dried, forms a fine powder without odor, insoluble in water and dilute acids, but soluble in alcohol, benzol, and chloroform. Aristol, another of these bodies, is the biniodide of dithymol, and is formed by acting on a solution of thymol in caustic soda, with iodine dissolved in iodide of potassium. It is a reddish-brown amorphous body without odor, and apparently non-toxic. Aristol is insoluble in water and glycerin, slightly soluble in alcohol, and readily soluble in ether. It adheres well to the skin, and is very convenient for employment in the form of powder. It has been used by Eichoff in lupus and psoriasis with good effect.—*British Medical Journal*, June 21, 1890.

LOCAL ANÆSTHESIA.

Dr. A. Dobisch, of Zwittau, has used, for the purpose of producing local anæsthesia, a spray, with Dr. Richardson's ether spray apparatus, composed of 10 parts of chloroform, 15 parts of sulphuric ether, and 1 part of menthol. After one minute's application of this spray, complete anæsthesia of the skin and neighboring tissues was obtained, which lasted for from two to six minutes, and sufficed for the performance of such minor operations as opening abscesses of the cervical glands, incising a deeply-seated whitlow, and the excision of an epithelioma of the nose. In all the cases in which he employed the spray above-mentioned the wounds healed quite satisfactorily.—*Lancet*, June 14, 1890.

MORPHINE AS AN ANTIDOTE TO ATROPINE.

A case of considerable interest occurred at Chadarghat, in Hyderabad, recently, and is reported in the *Medical Record* of Calcutta. A medical student, who was a great sufferer from neuralgia, for which he was accustomed to take antipyrin, went to indulge in his customary dose, but hit upon the wrong bottle, and took 6 grains of atropine instead. In a few moments he became unconscious and fell. He was seen by a brother medical student, who instantly ran off and called Surgeon-Major Edward Lawrie. An emetic was speedily given, and the stomach-pump used to wash out the contents of the stomach. The patient, however, seemed to be rapidly sinking from the effects of the drug. The pupils were dilated to their fullest extent, there were foaming at the mouth, stertorous respiration, and a rapid intermitting pulse. The condition seemed hastening towards the end, when Dr. Lawrie thought he would re-

sort to the antagonistic effects of morphine, and injected 1 grain of this drug subcutaneously, with no apparent effect. He then injected another grain, but with no decided result. The patient, though still alive, seemed hovering in the balance between life and death. From eight o'clock in the morning till three in the afternoon artificial respiration was resorted to with varying intervals of rest. Dr. Lawrie now determined to try the hypodermic injection of ⅓ of a grain of morphine, and this seemed to be the determining antidote, for in an hour the pulse improved, the breathing gradually resumed its normal stand, and consciousness returned.—*Lancet*, June 14, 1890.

IS REMOVAL OF THE TONSILS DANGEROUS?

Removal of the tonsils by the bistoury or guillotine is a popular operation in this country. The French are less partial to it, and MM. Quénu and Lucas-Championnière have recently dwelt on its dangers at the Paris Société de Chirurgie. The latter surgeon referred to two cases in Broca's practice where profuse hemorrhage followed removal of the tonsils. In one of these instances the patient, a medical student, died almost immediately after one tonsil was cut, so violent and uncontrollable was the bleeding. In a case in M. Lucas-Championnière's own experience the patient, a middle-aged man, had enlarged tonsils, quite free from inflammation, and he was not subject to any morbid condition liable to prevent the natural arrest of hemorrhage. On removal of one tonsil hemorrhage took place, and could not be checked until after two hours of digital pressure with a tampon soaked in ergotin. M. Quénu always uses the galvano-cautery three or four times, at intervals of a fortnight, and atrophy of the tonsil always follows. MM. Marc Sée and Chauvel do not dread the knife. There can be no doubt that hypertrophy of the tonsils requires active treatment, especially in youth; the evil consequences of neglect are well known. In the majority of cases the risk of dangerous hemorrhage is very slight; but the possibility of its occurrence should always be borne in mind, and the use of ice or of a styptic gargle should be enforced as a measure of precaution immediately after the operation.—*British Medical Journal*, June 21, 1890.

MENTHOL IN THE HYPEREMESIS OF PREGNANCY.

Hyperemesis in pregnancy is a grave complication. Within the last ten years Professor Horwitz, of St. Petersburg, and Dr. Graily Hewitt have written upon the subject. Dr. Copeman first published in the *Journal* of May 29, 1875, the famous case which he treated after the method to which his name has since been applied. "Copeman's treatment" signifies the relief of sickness by dilatation of the os and cervix uteri. The obstetrician's fingers are usually sufficient for the purpose. The treatment has been widely adopted; between 1875 and 1880 several experienced obstetricians contributed papers to our columns on successful cases, and for full information we refer the reader to the statistical tables published by Dr. Hewitt in the *Transactions of the Obstetrical Society* for 1884. Of course Copeman's treatment does not suit every case. Dr. Gottschalk recently described a case in the *Berliner Klinische Wochenschrift*, where, in a woman, aged 26, who had been pregnant three times, incontrollable vomiting set in during the second month of her fourth pregnancy. Neither cocaine nor Copeman's treatment availed, and the sickness continued until abortion was induced. The patient became pregnant for the fifth time, and the vomiting returned, hæmatemesis taking place. A draught, consisting of menthol 1 part, rectified spirits 20 parts, and distilled water 150 parts, was prescribed by Dr. Gottschalk, and a tablespoonful given every hour. The vomiting ceased after the third dose, and pregnancy proceeded to term without any further complication. A second case was successfully treated with menthol.—*British Medical Journal*, June 14, 1890.

FLUOROFORM.

From the *Monthly Journal of Pharmacy* we learn of the announcement by the French chemist, M. Meslans, that he has succeeded in preparing fluoroform. It is the analogue of chloroform and iodoform, the chlorine and iodine of these substances being replaced by fluorine in fluoroform. But whereas chloroform is a liquid and iodoform is a solid at ordinary temperatures, fluoroform is a gas. It is colorless, and has a pleasant ethereal smell recalling that of chloroform.—*Lancet*, June 7, 1890.